SOUTHWEST AREA
FIRE WEATHER
ANNUAL OPERATING PLAN

2006

Arizona
New Mexico
West Texas
Oklahoma Panhandle

2006 SOUTHWEST AREA FIRE WEATHER ANNUAL OPERATING PLAN

Southwest Area Interagency Fire Weather Operating Plan - 2006

I. INTRODUCTION

This document serves as the Interagency Fire Weather Annual Operating Plan (AOP) for the Southwest Geographic Area. The general relationship between NWS and the interagency fire management community is set forth in the National Interagency Agreement for Meteorological Services. The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in the Southwest Area, as allowed under the umbrella of the National Agreement.

References include:

- National Weather Service NWSI 10-4: Fire Weather Services
- Interagency Agreement for Meteorological Services (National MOA or "National Agreement")
- Southwest Area and National Mobilization Guides

II. SIGNIFICANT CHANGES SINCE LAST YEAR

A. New Mexico NFDRS fire weather zones reconfigured (page 60)
B. Experimental Digital services from the National Weather Service (Appendix F.)
C. 7 Day Significant Fire Potential Outlook from Predictive Services (Pages 29 & 52)
D. Red Flag event criteria changed from 3 or more continuous hours to 3 or more hours (Page 13)
E. Site-specific ventilation data available in spot forecasts under adverse dispersion conditions (page 11)

III. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

A. Fire weather services are provided by SWA Predictive Services and the NWS forecast offices listed below. (Service areas are depicted in the Appendix D, starting on page 55). Contact information follows.

Amarillo, TX	Lubbock, TX	El Paso, TX
Midland, TX	Albuquerque, NM	
Tucson, AZ	Phoenix, AZ	
Flagstaff, AZ	Las Vegas, NV	

SOUTHWEST AREA PREDICTIVE SERVICES
333 Broadway SE, Albuquerque, NM 87102
FAX Number: (505) 842-3414 or (505) 842-3801
Web Site Address: http://www.fs.fed.us/r3/fire/

Name	Position	Work	Cell	E-Mail
Chuck Maxwell	Meteorologist / Group Leader	(505) 842-3419	362-7008	cmaxwell@fs.fed.us
Rich Naden	Meteorologist / RAWS Coord.	(505) 842-3415	362-7038	rnaden@fs.fed.us
Jay Ellington	Fire Intelligence Coordinator	(505) 842-3473	301-0850	jayellington@fs.fed.us

WEATHER SERVICE FORECAST OFFICE, PAB 500, P.O. Box 52025, Phoenix, AZ 85072-2025
FAX Number: (602) 267-8051
Web Site Address: http://www.wrh.noaa.gov/psr/fire/index.php?wfo=psr
Backup Office: NWS WFO Tucson, AZ

Name	Position	Unlisted Direct Phone	E-Mail
Valerie Meyers	IMET Trainee/Fire Weather Prog. Mgr.	(602) 275-7003	Valerie.Meyers@noaa.gov
David Runyan	Warning Coord Meteorologist	(602) 275-7003	David.Runyan@noaa.gov
Tony Haffer	Meteorologist-ln-Charge	(602) 275-7003	Anton.Haffer@noaa.gov

WEATHER SERVICE FORECAST OFFICE, P.O. Box 16057, Flagstaff, AZ 86015-6057
FAX Number: (928) 774-3914
Web Site Address: http://www.wrh.noaa.gov/fgz/fwx/fwx.php?wfo=fgz
Backup Office: WFO Las Vegas

Name	Position	Unlisted Direct	E-Mail
Mark Stubblefield	IMET	(928) 774-4414	mark.stubblefield@noaa.gov
Robert Bohlin	Fire Weather Prog. Manager	(928) 774-4414	robert.bohlin@noaa.gov
George Howard	Warning Coord. Meteorologist	(928) 774-4414	george.howard@noaa.gov
Brian Klimowski	Meteorologist in Charge	(928) 774-4414	brian.klimowski@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 520 N. Park Ave., Suite 304, Tucson, AZ 85719
FAX Number: (520) 670-5167
Web Site Address: http://www.wrh.noaa.gov/twc/firewx.php
Backup Office: WFO Phoenix

Name	Position	Unlisted Direct	E-mail
Steve Reedy	IMET/Fire Weather Prog. Manager	(520) 670-5161/5160	steve.reedy@noaa.gov
Tom Evans	Warning Coord. Meteorologist	(520) 670-5161/5160	tom.evans@noaa.gov
Glen Sampson	Meteorologist In Charge	(520) 670-5161/5160	glen.sampson@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 7851 Dean Martin Drive, Las Vegas, NV 89139
FAX Number: (702) 263-9759
Web Site Address: http://weather.gov/lasvegas/fire.php
Backup Offices: WFO Flagstaff - Phone 775-673-8105/ Fax 775-673-8110 and WFO Elko - Phone 775-778-6720/Fax 775-778-9786

Name	Position	Unlisted Direct	E-mail
Jim Harrison	Fire Weather Program Mgr./IMET	(702) 263-9750/9749	jim.harrison@noaa.gov
Andy Bailey	Warning Coord. Meteorologist	(702) 263-9750/9749	andy.bailey@noaa.gov
Kim Runk	Meteorologist In Charge	(702) 263-9750/9749	kim.runk@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 2341 Clark Carr Loop SE, Albuquerque, NM 87106
FAX Number: (505) 842-9162
Web Site Address: http://www.srh.noaa.gov/abq/firewx/fw-3.htm
Backup Office: WFO El Paso/Santa Teresa

Name	Position	Unlisted Direct	E-mail
Brent Wachter	Fire Weather Program Mgr./IMET	(505) 244-9148*	john.wachter@noaa.gov
Keith Hayes	Warning Coord. Meteorologist	(505) 244-9148*	keith.hayes@noaa.gov
Charlie Liles	Meteorologist In Charge	(505) 244-9148*	charlie.liles@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 2579 South Loop 289 Suite 100, Lubbock, TX 79423-1400
FAX Number: (806) 745-1058
Web Site Address: http://www.srh.noaa.gov/lub/fire/firewx.htm
Service Backup Office: WFO Amarillo

Name	Position	Unlisted Direct	E-mail
Jose Valdez	Fire Weather Program Leader	(806) 745-4260/3980	jose.valdez@noaa.gov
Justin Weaver	Meteorologist In Charge	(806) 745-4260/3980	justin.weaver@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 1900 English Rd., Amarillo, TX 79108
FAX Number: (806) 335-3118
Web Site Address: http://www.srh.noaa.gov/ama/fire_weather/
Service Backup Office: WFO Lubbock

Name	Position	Unlisted Direct	E-mail
Ken Schneider	Fire Weather Program Leader	(806) 335-9022	ken.schneider@noaa.gov
Steve Drillette	Warning Coord. Meteorologist	(806) 335-9022	steve.drillette@noaa.gov
Jose Garcia	Meteorologist In Charge	(806) 335-9022	jose.garcia@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 7955 Airport Road, Santa Teresa, NM 88008
FAX Number: (505) 589-1158
Web Site Address: http://www.srh.weather.gov/elp/misc/firewx.shtml
Service Backup Office: WFO Albuquerque

Name	Position	Unlisted Direct	E-mail
Tom Bird	Fire Weather Prog. Leader/IMET	(505) 589-3982*	tom.bird@noaa.gov
Corey Pieper	IMET Trainee	(505) 589-3982*	corey.pieper@noaa.gov
John Fausett	Warning Coord. Meteorologist	(505) 589-4162	john.fausett@noaa.gov
Bill Alexander	Meteorologist In Charge	(505) 589-4161	bill.alexander@noaa.gov

WEATHER SERVICE FORECAST OFFICE, 2500 Challenger Dr., Midland, TX 79706-2606
FAX Number: (432) 563-8117
Web Site Address: http://www.srh.noaa.gov/maf/HTML/fire_weather.html
Service Backup Office: WFO San Angelo, TX, (432) 944-0715

Name	Position	Unlisted Direct	E-mail
Greg Murdoch	Fire Weather Prog. Leader/IMET	(432) 563-5006/6217	gregory.murdoch@noaa.gov
Pat Vesper	Warning Coord. Meteorologist	(432) 563-5006/6217	pat.vesper@noaa.gov
Ray Fagen	Meteorologist In Charge	(432) 563-5006/6217	raymond.fagen@noaa.gov

SOUTHWEST AREA PREDICTIVE SERVICES COMMITTEE LIAISONS	
Albuquerque WFO	David Isackson Santa Fe N.F. – Espanola dwisackson@fs.fed.us Office: (505) 753-7331 Cell: (505) 660-8853
Lubbock & Amarillo WFOs	Steve Fisher Lake Meredith National Recreation Area Steve_Fisher@nps.gov Office: (806) 865-3874 Cell:
Midland & Santa Teresa WFOs	James Villard Lincoln National Forest – Sacramento RD jvillard@fs.fed.us Office: (505) 682-2551 Cell: (505) 301-2032
Phoenix WFO	Helen Graham Bureau of Land Management - Phoenix Helen_Graham@blm.gov Office: 623 580-5635 Cell: 602 903-8626
Tucson WFO	Russ Babiak Buenos Aires National Wildlife Refuge Russ_Babiak@fws.gov Office: 520 823-4251 ext. 113 Cell: N/A
Las Vegas WFO	Vacant Bureau of Land Management - Kingman Office 928-692-4429 Cell: 928 530-2100
Flagstaff WFO	Ed Hiatt Grand Canyon National Park Office: (928) 638 0001 Edward_Hiatt@nps.gov Cell: (928) 606 1401

SOUTHWEST AREA PREDICTIVE SERVICES COMMITTEE			
Name	**Agency/Unit**	**Phone**	**E-mail**
Ed Hiatt	NPS/Grand Canyon	928-638-0001	Edward_Hiatt@nps.gov
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Rich Naden	NPS/SWCC	505-842-3415	rnaden@fs.fed.us
Dave Isackson	USFS/SAFNF	505-753-7331	dwisackson@fs.fed.us
Rita Booth	USFS/A-S NF	928-333-4417	rbooth@fs.fed.us
Ron Melcher	AZ State Lands	602-255-4059	ronmelcher@azstatefire.org
James Villard	USFS/Lincoln NF	505-682-2551	jvillard@fs.fed.us
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Russ Babiak	FWS/Buenos Aires	520-823-4251 ext. 113	Russ_Babiak@fws.gov
Brad Smith	Texas Forest Service	903-297-4840	bsmith@tfs.tamu.edu
* Denotes committee chair			

B. Participating Agencies

1. DOC/NOAA/National Weather Service – Western and Southern Regions
2. USDA Forest Service – Southwest Region
3. DOI Bureau of Land Management – Arizona & New Mexico State Offices
4. DOI National Park Service – Intermountain Region
5. DOI US Fish and Wildlife Service – Southwest Region
6. DOI Bureau of Indian Affairs – Units of the Southwest, Navajo, and Western Regions that fall within the Southwest Geographic Area
7. New Mexico State Forestry Division
8. Arizona State Land Department
9. Texas Forest Service – Areas west of 100°W longitude

IV. NATIONAL WEATHER SERVICE SERVICES AND RESPONSIBILITIES

A. Basic Services – The following constitute the current operational fire weather forecast products provided by NWS. Significant changes to these forecast services or deployment of new operational forecast products and services will be coordinated through the Southwest Area Weather Committee and Southwest Area Predictive Services (Reference NWSI 10-403). Any non-operational forecast products will be clearly labeled as "Experimental" or "Prototype".

1. Fire Weather Planning Forecasts

Fire weather planning forecasts are issued by all NWS offices serving the Southwest Area. The intent is to provide general, zone based information for daily preparedness and planning purposes.

a) Issuance times - At least once daily by 830 a.m. local time on a year round basis. Afternoon forecasts will be issued by some offices on a year round basis, and by others on a seasonal basis, no later than 330 p.m. local time. Beginning and ending dates of seasonal afternoon forecasts will be coordinated through Predictive Services.

Forecasts will be updated when a Fire Weather Watch or a Red Flag Warning is issued, the current forecast does not adequately represent current or expected weather conditions or a typographical/format error is detected.

b) Access – Forecasts are made available within minutes via WIMS, the Southwest Area Wildland Fire Operations Web Site and the web sites of the various NWS offices that serve the Southwest Area. Links to all forecasts and NWS office web pages can be found at. http://gacc.nifc.gov/swcc/predictive/weather/weather.htm

c) Content and Format – Forecasts will conform to either the national standard narrative or national standard tabular format, per NWSI 10-401. The Amarillo and Lubbock offices will use the tabular format, while all others will use the narrative format. Morning forecasts will focus on the following 36 hours and afternoon forecasts on the following 48 hours, with general extended outlooks in both cases out to at least 5 days.

Each forecast will begin with pertinent headlines and a non-technical weather discussion. Headlines are required for Red Flag Warnings and Fire Weather Watches, but <u>may</u> be included for other situations including air stagnation, record heat, severe weather potential, etc.

Forecasts for the first 36 or 48 hours will contain at least the following elements for each zone or zone grouping, listed in the order they will appear.

a. Headline(s) as appropriate
b. Sky/weather
c. Temperature and 24 hour trends
d. Humidity and 24 hour trends
e. Wind - 20 foot RAWS standard (slope/valley)
f. Ridgetop or 10,000 Ft. MSL Wind
g. Probability of Precipitation
h. Lightning Activity Level (LAL)
i. Haines Index
j. *Mixing Level
k. *Transport Winds
l. *Ventilation (kt-ft) and Ventilation/Dispersion Category (State defined)
m. Extended outlook to at least day 5 (or at end of product)

* Ventilation/smoke dispersion required for daytime periods only. In addition to Ventilation value (kt-ft), Ventilation/Dispersion category will be provided on the same line or on the following line. Ventilation information not provided for every zone in AZ or TX.

Format examples and descriptions of forecast parameters can be found in the appendices.

d) Consistency and Applicability Guidelines

The following guidelines for wind speed and relative humidity in the daily narrative forecasts do not apply if there are legitimate meteorological reasons for deviating from the guidelines AND the reasons are clearly explained in the narrative discussion. Where a range of values is given in the forecast, the midpoint will determine the value for the purposes of consistency and applicability. (i.e. A 20 ft. wind speed of 10-20 mph would be counted as 15 mph, and a forecast of $\leq$ 5 mph or $\geq$ 25 mph for an adjacent zone would be considered inconsistent.)

Parameter	**Inter-zone Consistency**	**Applicability (Forecast Range)**
20 ft. wind speeds	± 10 mph	5 mph for speeds ≤ 10 mph 10 mph for speeds > 10 mph
10,000 ft MSL winds	± 10 mph	50% of highest speed indicated
Min RH	± 5% when RH ≤ 20% ± 10% when RH > 20%	5% when RH ≤ 20% 10% when RH > 20%
Max RH	± 10% when RH ≤ 40% ± 20% when RH > 40%	10% when RH ≤ 40% 20% when RH > 40%

2. Spot forecasts

a) Criteria - Spot forecasts are site-specific forecast products issued for wildfires, prescribed burns, search and rescue operations, aerial spraying, etc., and are available upon request at any time of day, week or season. Spot forecasts are available to any federal, state or municipal agency.

Site-specific forecasts are considered one-time requests, and are not routinely updated. Spot forecasts will be updated when representative observations are available to the forecaster and/or the forecaster deems the current forecast does not adequately represent current or expected weather conditions. Priority for the update of spot forecasts is as follows:

- Wildfires
- Prescribed burns or Wildland Fire Use (WFU)
- Everything else

Land management personnel should contact the appropriate WFO for a spot update if forecast conditions appear unrepresentative of the actual weather conditions.

The spot forecast will be corrected when a typographical/format error is detected. Corrections should be delivered to users in the same manner as the original spot forecast when possible.

NWS Western Region offices will offer automatic 7-day FARSITE weather support with all wildfire spot forecast issuances. For prescribed burn spot forecasts, FARSITE data will be produced at the request of the agency. Please refer to Appendix F – Experimental Digital Services from the NWS.

b) Content and Format – Spot forecasts will contain the required minimum elements, unless otherwise specified upon request:

a. Headline (required when Red Flag Warning / Fire Weather Watch)
b. Discussion
c. Sky/weather (including chance of rain)
d. Temperature
e. Relative humidity
f. 20 foot winds

Optional elements may be included upon request, including site-specific ventilation for smoke management purposes. The following conditions

apply to the provision of ventilation data in spot forecasts in New Mexico and Arizona:

- Ventilation for the nearest forecast reference point in the fire weather planning forecast rates as POOR in New Mexico or MARGINAL or POOR in Arizona.
- Elevation-adjusted ventilation for a specific site, based on the information in the fire weather planning forecast, rates as POOR in New Mexico or MARGINAL or POOR in Arizona.
- The fire weather planning forecast rating is FAIR, but unusual, extenuating circumstances make additional information essential for accomplishment of management objectives (e.g. particularly sensitive downwind receptor). In these unusual cases, the requester is encouraged to call/consult with the fire weather meteorologist on duty prior to submitting a spot request.

  The valid time will be determined at the time of the request. Most spots contain three periods, usually "TODAY", "TONIGHT", and "NEXT DAY", e.g., "TODAY", "TONIGHT", and "THURSDAY".

c) Procedures – Internet based spot programs are the standards for requesting and retrieving spot forecasts and should be used when available. They are accessible via the SWCC Fire Operations Web Site and the web sites of the various NWS offices that serve the Southwest Area. Links to all forecast information and NWS office web pages can be found at http://gacc.nifc.gov/swcc/predictive/weather/weather.htm. In times when Internet access is hindered or not possible, spot forecasts may be requested and disseminated via phone or fax using the backup spot forecast request form found in the appendices. In all cases, spot forecasts should be available 60 minutes or less from the time the appropriate NWS office receives the request. NWS should be contacted immediately by telephone if a spot forecast is not available within this time frame.

   At or before the time of a spot request, the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the responsible WFO along with the request for a spot forecast(s). NWS Spot and the backup form will provide blocks to fill this data in and will indicate which are absolutely essential to receive a spot forecast.

Spot Forecast Feedback Requirement

Responsibility for providing fireline observations for the validation of forecast accuracy rests with the fire management agencies, as outlined under, "Fireline Observations & Spot Forecast Feedback" on page 30.

3. Fire Weather Watches and Red Flag Warnings - The Red Flag program is a means by which the weather forecaster informs the land management agencies of the combination of dry fuels and weather conditions that support extreme fire behavior. Identification of Red Flag events is a primary responsibility of the forecaster producing the fire weather forecasts, though fire management personnel may request that an event be so identified under extenuating circumstances. Such requests will be passed to the appropriate zone coordination center(s) and then on to the appropriate NWS office(s).

   A Red Flag Warning is used to inform agencies of the imminent or actual occurrence of Red Flag conditions. A Red Flag Warning will be issued immediately when there is high confidence that Red Flag criteria will be met within the next 24 hours, if those criteria are already being met or if fire management personnel specifically request that one be issued.

   A Fire Weather Watch is used to alert agencies to the high potential for development of a Red Flag event in the 12-72 hour time frame. The watch may be issued for all, or selected, portions within a fire weather zone or region. As with Red Flag Warnings, a Watch may also be issued upon specific request from fire management personnel.

   a) Criteria – Standardized criteria for issuance of Fire Weather Watches and Red Flag Warnings in the Southwest Area are a combination of weather and fire danger ratings. In the absence of overriding input from fire management personnel, a Red Flag event is defined by the following conditions occurring simultaneously for three or more hours across any portion of a fire weather zone:

      a. 20 ft. winds sustained at 20 mph or greater or gusting to 35 mph or greater
      b. Relative humidity of 15% or lower
      c. NFDRS adjective fire danger rating of "High" or higher

      The following are assumed:

      a. Sustained winds are considered relative to the midpoint of a forecast range (i.e. 15-25 mph meets criteria, 15-20 mph does not)
      b. RH is considered relative to the minimum value in a given forecast range. (i.e. 13-23% forecast for a zone meets criteria for

those locations in the zone expected to be 15% or less)

c. Wind forecasts are for the 20 ft. level/10 min. time average and apply to RAWS properly sited and maintained, per NWCG National Fire Danger Rating System (NFDRS) Weather Station Standards.

b) Product Format and Contents - A short message (RFW) will be used for issuing, updating, and canceling all Fire Weather Watches and Red Flag Warnings. That message will include:

a. Headline including description of watch/warning, description of valid location and time period for which watch/warning is valid.
b. List of fire weather zones impacted
c. Short discussion detailing causes and nature of event

c) Procedures and Access - When Fire Weather Watches and Red Flag Warnings are issued; they will be headlined in spot forecasts, the fire weather narrative and the appropriate zone sections where the conditions are expected. The headline will be in the same descriptive format as on the RFW product itself. If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the general forecast, the NWS office will verbally notify the affected zone dispatch centers, and e-mail the update to SWCC Predictive Services, as soon as possible. Red Flag Warnings and Fire Weather Watches will remain in effect through the expiration time noted in the forecast, or until canceled or upgraded

Red Flag Warnings and Fire Weather Watches are available within minutes of issuance via WIMS, the SWCC Fire Operations Web Site and the web sites of the various NWS offices that serve the Southwest Area. Links to all forecasts and NWS office web pages can be found at http://gacc.nifc.gov/swcc/predictive/weather/weather.htm

4. NFDRS Forecasts – The National Weather Service role in NFDRS is providing 24 hour forecasted weather which allows the NFDRS software to predict the next day's fire danger indices.

a) Criteria for Issuance – NWS will issue forecasts for use by the NFDRS daily on a year-round basis when NFDRS observations are received. NFDRS observations must be complete and available in WIMS by 1350 LST (1450 LDT) to be received by NWS in time to produce a forecast. NFDRS stations that do not have valid observations in WIMS on time will not have next day fire danger indices available.

b) Content and Format – Complies with NWSI 10-4 and is outlined in Appendix A for reference. Required meteorological elements for

NFDRS forecasts are: State of Weather, temperature, humidity, wind speed, and precipitation duration. Lighting Activity Level (LAL) will be forecast only for the portions of Arizona served by NWS Las Vegas, Phoenix, and Tucson; while LAL will be discontinued as a forecast element elsewhere. The actual NWS NFDRS forecast product is used only by WIMS and is not viewed directly by fire management.

c) Procedures – For every NFDRS observation received from WIMS at the 1400 LST (1500 LDT) collective, forecast weather parameters for 1300 LST (1400 LDT) the next day will be produced. This will occur through any combination of zone trend, station trend or station specific forecasts. Zone and station trend forecasts will be favored over station specific forecasts. Where station specific point forecasts are issued, NWS will be responsible for taking reasonable actions to ensure forecasted values do not conflict with the historical possibility for those stations.

5. Participation in Interagency Groups - NWS offices providing service within the Southwest Area are expected to provide representation at the annual regional AOP meeting, with proxy representation acceptable, and will be invited to serve as technical advisors on the Southwest Area Predictive Services Committee as appropriate. NWS offices are also expected to host at least one meeting per year with local fire management units to strengthen the customer relationship and address local concerns.

B. Special Services. – NWS will provide and maintain a cadre of trained IMETs. Enough IMETs should be available from Southwest Area offices to support multiple incidents in May and June. At least one IMET from the offices that serve the Southwest Area should be available for dispatch between March 1st and August 1st.

C. Forecaster Training. - The NWS recognizes the need for specialized training in fire weather meteorology for forecasters. Any NWS meteorologist producing fire weather products will have met the requirements set forth in NWSI 10-405

D. Individual Forecast Office Information

1. Northwest Arizona - Las Vegas, NV

Unless otherwise mentioned, it is to be assumed that services provided by NWS Las Vegas for units in Arizona will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

The National Weather Service in Las Vegas, NV is responsible for providing Fire Weather support for northwest Arizona. The area of responsibility covers fire weather narrative zones 101 and 102, which includes all of Mohave County.

Fire Weather Planning Forecasts

Narrative forecasts will be issued by 700 am and 330 pm during the fire season and by 700 am during the off-season for Arizona narrative zones 101 and 102.

Spot Forecasts

The Las Vegas office will prepare spot weather forecasts for prescribed burns and wildfires as requested for locations within the office's fire weather service area. Spot forecasts can be requested and retrieved via the Internet at:

http://weather.gov/lasvegas/fire.php

Click on the link to the spot forecast request.

Red Flag Warnings / Fire Weather Watches

Red Flag Warnings and Fire Weather Watches will be issued as required for Arizona narrative zones 101 and 102 after coordination with customers and adjacent NWS offices.

NFDRS Forecasts

The Las Vegas office will issue NFDRS forecasts for Arizona NFDRS zones 301 and 311.

Training

The fire weather program leader and the warning coordination meteorologist are available to handle fire weather training requests from Northwest Arizona customers.

Additional Information

The Las Vegas office maintains a Fire Weather Page on its web site home page. This page contains links to forecasts, RAWS observations, annual operating plans, and other fire weather related sites. A clickable map is provided to obtain a narrative forecast. Simply click on the map within the region of interest. To go directly to the Las Vegas fire weather web site, use the following url:

http://weather.gov/lasvegas/fire.php

2. Northern Arizona - Flagstaff, AZ

Unless otherwise mentioned, it is to be assumed that services provided by NWS Flagstaff will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

The National Weather Service office in Flagstaff provides fire weather support for most of northern Arizona. This area covers fire weather zones 104 through 118 and zones 137 through 140 (NFDRS zones 302, 303, 304, and 308). The office provides a full range of support services including regular fire weather pre-suppression forecasts, spot forecasts for prescribed burns and wildfires, ventilation forecasts, fire weather watches and Red Flag warnings. The office also provides training support for the S-290 course, RX-300 course, and other training requirements as requested by the fire management agencies.

Fire Weather Planning Forecasts

The Flagstaff office issues routine Fire Weather Forecasts for its narrative zones (104 through 118 and 137 through 140) at 7:30 a.m. and 3:30 p.m. daily during the fire weather season. During the non-fire weather season, the Fire Weather Forecast is issued once daily by 7:30 a.m. Ventilation forecasts for Flagstaff, Whiteriver and several other locations in northern Arizona are provided.

Spot Forecasts

The Flagstaff office prepares spot weather forecasts for prescribed burns and wildfires on request. The primary means of requesting spot forecasts is the web-based spot weather forecast system on the NWS Flagstaff homepage. The requesting agency should place a follow-up phone call to the NWS Flagstaff office to ensure receipt of the request. The forecaster will call the requesting agency when the spot forecast is completed and available on the web page. The web address for requesting and retrieving spot forecasts is:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=fgz

Red Flag Warnings / Fire Weather Watches

Red Flag Warnings and Fire Weather Watches are issued as required for Arizona narrative zones 104 through 118 and 137 through 140. These products are coordinated with the appropriate adjacent weather offices.

NFDRS Forecasts

NFDRS forecasts are issued for Arizona NFDRS zones 302, 303, 304, and 308.

Training Services

Meteorologists are available to assist with training requirements of the fire management agencies in northern Arizona.

Additional Information

The NWS Flagstaff office maintains a Local Fire Weather Page on its website. This page contains routine Fire Weather and Spot Forecasts, as well as Fire Weather Watches and Red Flags Warnings. Other information of interest to land managers also resides there. The web site address is: http://www.wrh.noaa.gov/fgz/fwx/fwx.php?wfo=fgz.

3. Southeast Arizona - Tucson, AZ

Unless otherwise mentioned, it is to be assumed that services provided by NWS Tucson will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

The National Weather Service in Tucson is responsible for providing Fire Weather support for southeast Arizona. Its area of responsibility covers Arizona fire weather zones 146 through 148. The office provides a full range of support services including the regular fire weather pre-suppression forecast, spot forecasts for prescribed burns and wildfires, as well as any Fire Weather Watches and Red Flag Warnings. The National Weather Service Office in Tucson will also provide training support for weather portions of Forest Service courses in southeast Arizona.

Fire Weather Planning Forecasts

NWS Tucson will issue narrative forecasts for Arizona narrative zones 146, 147 and 148 by 730 am and 300 pm daily. Forecast content and format for days 1 and 2 will conform to the general regional guidelines described earlier in this document.

A 3 to 7 day extended forecast will be provided in the morning and afternoon forecasts. A forecasted wind speed and direction will be included in the 3 to 5 day forecast if the sustained synoptic scale winds are expected to be greater than 15 mph, otherwise the forecast wording will be stated as "No Significant Wind Over 15 mph". Minimum relative humidity values will also be provided in the 3 to 5 day forecast.

Spot Forecasts

The Tucson office will prepare spot weather forecasts as requested for wildfires and prescribed burns at any time. Spot weather forecasts will be issued as promptly as possible, usually in 30 minutes or less. The primary means of requesting and disseminating spot forecasts will be through the Internet based spot forecast/reply program. The Internet Spot program for Tucson can be accessed at from Tucson's fire weather page at:
http://www.wrh.noaa.gov/twc/firewx.php

Red Flag Warnings / Fire Weather Watches

Red Flag products (Fire Weather Watches and Red Flag Warnings) will be issued when required for Arizona fire weather zones 146 through 148. These products will be closely coordinated with the adjacent forecast offices

NFDRS Forecasts

The Tucson office will issue the NFDRS forecasts for NFDRS zones 305 and 306 between 2:45 pm and 3:15 pm daily. NFDRS Zone 305 corresponds to fire weather narrative zone 147 and NFDRS Zone 306 corresponds to fire weather narrative zones 146 and 148.

Training Requests

The Tucson Office will be available to assist with training requirements. Requests for these services should be made as far in advance as possible through the Tucson Fire Weather Program Manager or Meteorologist in Charge (MIC). NWS Tucson will handle all fire weather training requests from Southeast Arizona customers.

Office Visits

The Tucson Fire Weather Program Manager will visit local customer offices on a regular basis for coordination and quality assurance. The program manager will visit customers outside the Tucson metropolitan area as time permits.

Customers are encouraged to visit the weather service office to meet the forecasters who provide support and to see the latest in weather observation and forecast technology. Local customers are encouraged to attend the **office weather briefing** at 1130 am Monday through Friday (except holidays). Special briefings can be arranged on the weekends and holidays during extreme fire weather situations.

Internet

The Tucson office maintains a Fire Weather Page on its web site home page. The Tucson Fire Weather Home Page is located at:
http://www.wrh.noaa.gov/twc/firewx.php

4. **South-Central and Southwest Arizona - Phoenix, AZ**

Unless otherwise mentioned, it is to be assumed that services provided by NWS Phoenix will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

The National Weather Service, Phoenix Weather Forecast Office (WFO) is responsible for providing 24-hour fire weather support for southwest and south-central Arizona, as well as a portion of southeast California. The office provides a full range of services including routine fire weather pre-suppression forecasts, spot forecasts for prescribed burns and wildfire, fire weather watches and red flag warnings. The WFO's Arizona fire weather zones are 131, 132, and 133 and the southeast California fire weather zones are 230, 231, and 232.

Changes from Last Year

- The Phoenix office will have an Incident Meteorologist Trainee available.

Fire Weather Planning Forecasts

During the fire weather season, the routine fire weather forecast is issued twice-a-day no later than 730 a.m. and 330 p.m. MST. During the non-fire weather season, the fire weather forecast is issued once-a-day, no-later-than 730 a.m. MST.

Spot Forecasts

SPOT fire weather forecast requests are to be made either by the internet service at http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=psr or by faxing the SPOT request WS Form D-1 to the Phoenix WFO. After submitting the request, please call the WFO to confirm that the SPOT forecast request has been received. SPOT

forecast requests may be submitted at any time.

Red Flag Warnings / Fire Weather Watches

Red Flag Warnings and Fire Weather Watches will be issued as appropriate for Arizona fire weather narrative zones 131, 132 and 133, after collaboration with neighboring WFOs.

NFDRS Forecasts

Year-round NFDRS station trend forecasts are issued daily, no later than 330 p.m. MST based on NFDRS 1 p.m. MST observations from Arizona NFDRS zones 307, 309, and 310.

Training

Meteorologists are available to assist with training requirements of the fire management agencies in Phoenix's fire weather service area.

Additional Information

The WFO's internet fire weather page is at http://www.wrh.noaa.gov/psr/fire/index.php?wfo=psr with direct links to the SPOT forecast request service. The WFO's primary internet web site for all services is at http://www.wrh.noaa.gov/psr.

5. North and Central New Mexico - Albuquerque, NM

Unless otherwise mentioned, it is to be assumed that services provided by NWS Albuquerque will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

This section provides information specific to services provided by NWS Albuquerque.

Changes from Last Year

- NFDRS zone boundaries changed to match the Fire Weather zone boundaries.

Fire Weather Planning Forecasts

NWS Albuquerque issues routine fire weather narrative forecasts (FWF) for northern and central New Mexico. This includes FWF zones 101 - 109, which correspond generally to the areas encompassed by Taos, Santa Fe and Albuquerque dispatch zones. During the off-season, the afternoon forecast (Smoke Management Forecast) will contain only ventilation information.

Spot Forecasts

Albuquerque is responsible for spot forecasts for agencies within Taos, Santa Fe and Albuquerque dispatch zones. NWS Albuquerque uses the Internet based program called NWS spot for providing spot forecasts. Requests are taken and forecasts disseminated using the same interface at the following web address:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=abq

Please call if a spot forecast is not received within an hour of the time it was requested. Also, please call if a spot forecast request is sent via fax.

Red Flag Warnings / Fire Weather Watches

Red Flag Warnings and Fire Weather Watches will be issued as appropriate for New Mexico narrative zones 101 through 109. The product will continue to use the segmented format.

NFDRS Forecasts

NWS Albuquerque issues NFDRS forecasts for the following NFDRS zones in central and northern New Mexico: 351 to 359.

Additional Information - NWR (NOAA Weather Radio)

General weather information is broadcast continuously over NOAA Weather Radio. See NWR website: http://www.srh.noaa.gov/abq/nwr/nwr.htm .

6. South-Central and Southwest New Mexico - El Paso, TX

Unless otherwise mentioned, it is to be assumed that services provided by NWS El Paso (located in Santa Teresa, NM) will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

NWS El Paso serves Fire Weather interest across Southwest and South-Central New Mexico. These areas generally correspond to land entities served by the Gila and Lincoln dispatch zones, including: the Gila NF, Smokey Bear and Sacramento RDs of the Lincoln NF, New Mexico portion of the Coronado NF, BLM Las Cruces District, BIA Mescalero, NM State Forestry Socorro and portions of Capitan districts.

Changes from Last Year

- NFDRS zone boundaries changed to match the Fire Weather zone boundaries.
- New IMET Trainee on staff.

Fire Weather Planning Forecasts

NWS El Paso issues daily fire weather narrative forecasts (FWF's) for South-Central and Southwest New Mexico for New Mexico fire weather zones 110 through 113. Twice a day in-season issuance times are by 830 am and 230 pm Mountain Time. The off-season forecast is issues once daily by 830 am and is primarily in support of Rx burns.

Spot Forecasts

El Paso prepares spot forecasts upon request from fire management agencies within its fire weather service area. El Paso utilizes the national web based spot program as the primary way of requesting a spot forecast. The web address is: http://www.noaa.gov/cgi-bin/spot/spotmon?site=epz . Contact El Paso NWS for training or assistance needed with this program. If the web based spot page is unavailable, requests can be faxed to NWS El Paso via (505) 589-1158. Feedback is appreciated on all forecasts. *Please call (505) 589-3972 if a spot forecast is not received within an hour of the time it was requested.*

Red Flag Warnings / Fire Weather Watches

NWS El Paso issues Red Flag Warnings and Fire Weather Watches as appropriate for narrative zones 110 through 113 in South-Central and Southwest New Mexico.

NFDRS Forecasts

NWS El Paso issues NFDRS forecasts for stations in the following NFDRS zones in southwest and south-central New Mexico: 360, 361, 362 and 363.

Training Assistance

El Paso is the primary provider of fire weather related training assistance in southwest and south-central New Mexico.

Office Web Site

NWS El Paso maintains a fire weather web page at the following address:
http://www.srh.noaa.gov/elp/misc/firewx.shtml

7. Southeast New Mexico and Southwest Texas - Midland, TX

Unless otherwise mentioned, it is to be assumed that services provided by NWS Midland will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

NWS Midland serves southeast New Mexico and southwest Texas. Midland's fire weather service area includes the Pecos Valley Dispatch and a significant portion of Lincoln Zone. This includes lands managed by BLM Roswell, Bitter Lake NWR, NPS Carlsbad Caverns, the Guadalupe Mountains RD on the Lincoln NF, Big Bend NP, and Guadalupe Mountains NP, as well as Texas Forest Service and other state or municipal entities.

Generally, the fire weather season for this area is mid February through October with the largest fires typically occurring in May and June. The beginning and ending of peak season is coordinated with user agencies and is dependent on variable fuel and weather conditions.

Changes from Last Year

- New Mexico NFDRS zone boundaries changed to match the Fire Weather zone boundaries.

Fire Weather Planning Forecasts

WFO Midland issues daily narrative forecasts for its fire weather service area. During the fire season, these forecasts are issued twice daily by 830 am Mountain Time (930 am Central Time) and 230 pm Mountain Time (330 pm Central Time). The off-season FWF is mainly in support of Rx burns and is issued once a day by 830 am Mountain Time (930 am Central Time).

Spot Forecasts

Midland will issue a spot fire weather forecast upon request from fire

management agencies within its fire weather service area. The web based spot program is the primary means of initiating a spot request and is found at:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=maf

If this means is unavailable, request forms should be faxed to WFO Midland at 432-561-5057 or phoned into 432-563-6217 or 1-800-597-3220.

Red Flag Warnings / Fire Weather Watches

NWS Midland issues Red Flag Warnings and Fire Weather Watches as appropriate for the fire weather narrative zones in its fire weather service area.

NFDRS Forecasts

WFO Midland is responsible for issuing NFDRS forecasts for New Mexico NFDRS zones 364/365 and the Texas portion of NFDRS zone 364. Midland also issues NFDRS point forecasts for Panther Junction and Chisos Basin in Big Bend National Park.

8. West-Central Texas - Lubbock, TX

Unless otherwise mentioned, it is to be assumed that services provided by NWS Lubbock will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

The Lubbock Weather Forecast Office fire weather service area covers the following counties in the South Plains of Northwest Texas:

Bailey, Briscoe, Castro, Childress, Cochran, Cottle, Crosby, Dickens, Floyd, Garza, Hale, Hall, Hockley, Kent, King, Lamb, Lubbock, Lynn, Motley, Parmer, Stonewall, Swisher, Terry, Yoakum.

The fire weather season is generally from January 15 to April 30 west of the Caprock Escarpment. East of the Caprock Escarpment it is generally from December 15 to March 15 and from July 1 to September 15.

Federal Land Management Area Served

U.S. Fish and Wildlife Service (Muleshoe National Wildlife Refuge)

Fire Weather Planning Forecasts

These forecasts will be issued routinely once a day by 7 am and will conform to the national standardized tabular format for narrative forecasts.

Spot Forecasts

Lubbock will issue spot forecasts upon request for locations within its fire weather service area. Spot forecasts can be requested and retrieved at the following web address:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lub

Red Flag Warnings / Fire Weather Watches

NWS Lubbock issues Red Flag Warnings and Fire Weather Watches as appropriate for counties within its fire weather service area.

NFDRS Forecasts

NWS Lubbock issues NFDRS forecasts for stations within its service area from which daily observations are received. Currently, this includes two NFDRS stations owned by Texas Forest Service: Caprock (418901) and Matador (418902).

9. Texas and Oklahoma Panhandles - Amarillo, TX

Unless otherwise mentioned, it is to be assumed that services provided by NWS Amarillo will follow the regional policies and procedures set forth in the Southwest Area Fire Weather AOP.

General Information

This section provides information specific to services provided by NWS Amarillo. NWS Amarillo has the responsibility of providing fire weather information for its fire weather service area, which covers the following counties in the Amarillo service area:

Texas panhandle: Armstrong, Carson, Collingsworth, Dallam, Deaf Smith, Donley, Gray, Hansford, Hartley, Hemphill, Hutchinson, Lipscomb, Moore, Ochiltree, Oldham, Potter, Randall, Roberts, Sherman, and Wheeler

Oklahoma panhandle: Cimarron, Texas, and Beaver

Federal Land Management Agencies Served

- U.S. Fish and Wildlife Service: (Buffalo Lake National Wildlife Refuge)

- U.S. Forest Service: (Black Kettle National Grassland, McClellan Creek National Grassland, Rita Blanca National Grassland, and miscellaneous grasslands administered by the Cibola National Forest)
- National Park Service: (Lake Meredith National Recreational Area and Alibates Flint Quarries National Monument)

Fire Weather Season

Generally, there are two fire weather seasons for the Oklahoma and Texas panhandles. The first season is the winter season, which normally runs from November through March and the second season normally runs from June through September.

Fire Weather Planning Forecasts

These forecasts will be issued routinely twice a day by 7 am and 330 pm, with updates as necessary. The content and format will conform to the national standardized tabular format for fire weather forecasts, as exhibited on page 44.

Spot Forecasts

Amarillo will issue a spot weather forecast upon request from all local, state, and federal land management agencies in support of wildland fires and prescribed burns. Spot forecasts are requested and retrieved using the following web address:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ama.

If this means is unavailable, request forms should be faxed to WFO Amarillo at 806-335-3118 or phoned into 806-335-1421 or 1-800-275-8165.

Red Flag Warnings / Fire Weather Watches

Red Flag Warnings and Fire Weather Watches will be issued as required and in conjunction with Region 3 guidelines for minimum relative humidity, wind speed/gusts and fire danger rating level will be followed. Additionally, WFO Amarillo will also consider issuance based on dry lightning potential due to life and property concerns.

Fire Danger Statement

This is an event driven product that elaborates on the weather conditions which support high fire behavior.

NFDRS Forecasts

NWS Amarillo issues an NFDRS point forecasts for CEDAR station at Lake Meredith National Park and also for the Texas Forest Service's BOOTLEG station in Deaf Smith county. For a forecast to be issued, an observation must be received by 1530 LST.

Additional Access to Fire Weather Products

If you would like to have any or all of the fire weather products e-mailed to you, please send your e-mail address to ken.schneider@noaa.gov.

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Wildland Fire Agencies' programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. Some specific responsibilities of Wildland Fire Agencies are listed below.

A. Operational Support and Predictive Services – Interagency fire meteorologists at SWCC combine forecast information from NWS and other sources into areawide summaries and briefings. These meteorologists work in conjunction with Fire Intelligence to form the Predictive Services Group, which produces integrated fire weather/fire danger assessments for the entire Southwest Area. The intent of Predictive Services is to provide strategic, regional and sub-regional information to assist in the preparedness, movement and allocation of firefighting resources. SWCC Predictive Services is the exclusive provider of fire danger and potential forecasts within the Southwest Area beyond the next day NFDRS forecasts provided by NWS. All products and services are available online and can be obtained from the SWCC website at http://gacc.nifc.gov/swcc/predictive/outlooks/outlooks.htm

Predictive Services Products – (Examples in Appendix C)

1. **Day 1 and Day 2 Area-Wide Fire Weather & Behavior Outlooks.** Fire weather outlooks combine information from FCAMMS/Rocky Mountain Center, NWS and Predictive Services meteorologists into a day 1 and day 2 graphic of significant fire weather parameters. When the Fire Behavior Service Center is functioning at SWCC (Preparedness Level 3-4+), daily reports and maps of general fire behavior potential will be produced as well.

   Issuance Schedule: 1700 mountain time for the next day (primary), with updates as necessary by 1000 the following morning from April 1 – July 15, or as fire danger or activity warrants. Occasionally or upon request before and after peak season to support prescribed fire as well.

2. **7-Day Significant Fire Potential Outlook.** Integrates fuel dryness, weather triggers and resource capability into statistically based large fire potential by Predictive Services Area (PSA). Includes general weather synopsis, fire potential discussion and resource discussion.

   Issuance Schedule: Daily by 1000 mountain time from April 1 – July 15, or as fire danger or activity warrants. Monday through Friday by 1030 during the remainder of the year.

3. **Monthly and seasonal fire potential outlooks.** Utilizes all available weather, climate and fire danger information to make longer-term predictions of fire business potential. Outlooks will highlight time frames and potential for large fire activity and resource utilization relative to normal.

   Issuance Schedule (Monthly): Year round, a few days before the end of each month.
   Issuance Schedule (Seasonal): Two to three times per year, with a preliminary issuance in January and a primary outlook issued by the first week in April.

B. Program Management - Management of federal land management and fire agencies' fire weather programs and responsibilities.

   1. RAWS/NFDRS - Regional RAWS Coordinator at SWCC will manage the interagency RAWS program for the Southwest Area. This includes regular monitoring of data quality, assisting with station maintenance and acquisition and development of appropriate training.

   2. Liaison - Predictive Services Group Leader/Fire Weather Program Manager will be the primary liaison between field fire managers and various service providers including NWS, the private sector and the research community.

C. Monitoring, Feedback and Improvement of Fire Weather Information – SWCC meteorologists will monitor all sources of fire weather information to ensure consistency, quality and applicability. Where issues arise, data will be archived and brought to the attention of the provider to enhance awareness and work towards improvement. Some priorities include:

   1. NFDRS forecast consistency with station climate histories.
   2. General forecast parameter consistency across the Southwest Area, especially across forecast area and land management unit boundaries.
   3. Accuracy and applicability of Red Flag Warnings.
   4. Quality of fireline observations and spot forecast feedback.
   5. Overall adherence to policies and procedures set forth in AOP.

D. Technology Transfer – SWCC meteorologists will work to integrate advanced technology analytical and prediction systems into fire management planning and operations. Some efforts will include:

1. Regional numerical modeling of weather and smoke dispersion
2. Proper use of RAWS and NFDRS
3. Research and development to advance fire meteorology

E. Agency Computer Systems - Where fire management computer systems like WIMS are locally available, access to the systems will be granted to NWS to provide or develop services, as needed. Costs will be borne by the Interagency Wildland Fire Agencies for requirements that are beyond the distribution of weather information through a central communications gateway.

F. WIMS ID's for NFDRS Stations – All NFDRS observation stations are assigned a 6-digit NWS station identification number for use in WIMS. The SWCC RAWS Coordinator must be contacted for assignment of a 6-digit number for any new station, or for any changes in location made to existing stations that already have an NWS ID number. The RAWS Coordinator will obtain appropriate 6-digit ID's and will notify NWS, the Arizona Department of Environmental Quality and other appropriate entities of any new or relocated NFDRS stations. A listing of current NFDRS stations and IDs is included in the appendices.

G. Fire Weather Observations

1. RAWS & NFDRS Observations

   Fire weather observations for stations that desire next day forecasts will be entered into WIMS no later than 1350 LST (1450 LDT). Observations from Remote Automated Weather Stations (RAWS) sites will be the latest data available from the satellite interrogation. RAWS and NFDRS stations are expected to be sited and maintained according to NWCG PMS 426-3 "National Fire Danger Rating System Weather Station Standards". Proper siting of all stations is a goal in the Southwest Area rather than an operational reality. In practice, some long standing NFDRS stations will remain improperly sited due to extensive fire danger histories. Any new or relocated stations will be correctly sited in a long-term effort to address this issue. Regardless of station age or location, annual RAWS maintenance requirements will be strictly adhered to.

2. Fireline Observations & Spot Forecast Feedback

   Fireline Observations – Fireline observations are required when requesting a spot forecast. Fire management agency personnel will take standard fireline observations of temperature, humidity, wind speed and direction and weather/sky condition consistent with guidance provided in NFES 2140

"Weather Station Handbook - an Interagency Guide for Wildland Managers".

Spot Forecast Feedback and Validation - Feedback on spot forecasts is required to validate forecasts and improve accuracy. The following observational information is required to be made available to the appropriate NWS office the same day any spot forecast is issued for prescribed burn or wildland fire use (WFU) purposes. Feedback on forecasts issued for wildfires is encouraged.

Requirement: The character of temperature, humidity and wind affecting the burn period. Information made available to NWS within 24 hours of forecast issuance or before issuance of next spot forecast, whichever is first.

At a minimum, the following must be included (assuming daytime burn):

a) Maximum temperature
b) Minimum Relative Humidity
c) Significant afternoon winds (speed and direction)

In the event of nighttime burning, conditions affecting the burn period could include minimum temperature and maximum relative humidity.

Example of Minimum Required Feedback for Daytime Period:
Maximum temp = 61
Minimum RH = 18 %
Afternoon winds = South 2-4G8, shifting to west at 1500.

Acceptable Methods of Providing Feedback:

a. Faxed copies of fireline (belt weather) observations.
b. Phone call to appropriate NWS office
c. Submission of required information (see example) via "Feedback" section of Internet spot forecast.
d. Faxed or electronically transmitted copies of hourly weather data from an on-site portable weather station.
e. Notification of deployment of a portable GOES telemetered RAWS onsite, so NWS can download data from the Internet.

H. Reimbursement for NWS Provided On-site Support and Training Assistance – Federal agencies will reimburse NWS for all costs incurred by the agency for IMET support and training assistance, per the procedures set forth in the National Agreement. Non-federal agencies do not have blanket reimbursable agreements under the national agreement, but are still required to reimburse NWS for costs incurred.

1. Emergency (Incident) Support – Per the National Agreement, NWS will submit an itemized bill to the appropriate fire management agencies at the end

of the fiscal year. This bill will include; a) incident name, b) reimbursable costs incurred, and c) appropriate incident management code.

2. Training Assistance – Reimbursement of appropriate NWS costs related to provision of training assistance will be covered by a new interagency agreement entered into between NWS and USFS. This agreement covers appropriate NWS training expenses provided to all cooperating wildland fire management entities in the Southwest Area. **Below is the basic procedure for NWS to meet the terms of the reimbursable agreement pertinent to FY06, with updated information to be distributed at the beginning of FY07.**

    a. Upon confirmation of a training request where reimbursable costs will be incurred, the affected WFO will contact the SWCC Predictive Services Group Leader (contact information on page 5) to convey the scope of the training.
    b. Upon completion of training, the NWS training provider must complete a standard travel voucher and NWS Reimbursable Expenses for Fire Weather Services form, which itemizes the reimbursable expenses. **The USFS agreement number that must be referenced** on the document (in place of the management code) is 06-IA-11031600-009.
    c. Copies of the NWS travel voucher and Reimbursable Expenses for Fire Weather Services forms must be sent to the Predictive Services Group Leader (contact information on page 5) upon their completion.
    d. At the end of the fiscal year, NWS national or regional headquarters will present consolidated itemized bills for all services to the USFS, at the address below:

        USDA Forest Service
        Payments – Grants & Agreements
        101B Sun Ave. NE
        Albuquerque, NM 87109
        1-877-FS ASC48 (1-877-372-7248)

I. Liaisons to Southwest Area Predictive Services Committee – The Predictive Services Committee of the Southwest Area Coordinating Group will identify fire management agency contact points for each NWS Weather Forecast Office (WFO). These persons will act as primary liaisons between each NWS office, the fire management units they serve, and the Predictive Services Committee. Liaisons will provide single points of contact to aid in communication, organization of local customer meetings and the elevation of local issues to the Predictive Services Committee, as appropriate. Predictive Services Committee liaisons are listed in the organizational directory.

VI. JOINT RESPONSIBILITIES

A. Training – Meteorological training assistance for NWCG and other courses will be provided jointly. NWS has priority for training conducted by local units while SWCC meteorologists have priority for training conducted on a sub-regional or regional basis. Requests for training from NWS offices should be directed to that office's Meteorologist-in-Charge. Requests for training from SWCC meteorologists should be directed to the Predictive Services Group Leader/Fire Weather Program Manager. In all cases, sufficient advance notice should be given to allow for scheduling and proper preparation. Costs incurred by NWS in providing training assistance will be reimbursed via USFS Agreement Number 05-IA-11031600-025, as described in section V.H.2 on page 32.

   The following conditions must be met in order for NWS to provide training for non-federal agencies:

   - Sufficient lead-time to schedule an instructor must be given to an NWS office's Meteorologist-in-Charge.

   - The NWS instructor must be the only one available to provide the training. (i.e. There are no land management agency or private meteorologist who are ready, willing and able to provide the training.) *The Southwest Area Predictive Services Group Leader will be the contact concerning the availability of non-NWS fire weather instructors.*

   - NWS must be able to be reimbursed for associated overtime and travel costs. (This is covered via a USFS reimbursable agreement, per section V.H.2 on page 32).

B. Incident Response - In general, Southwest Area NWS IMETs will be requested to respond to all incidents within the Southwest Area. Costs incurred by NWS in providing IMET support will be borne by the requesting agency. Through coordination with the NWS National Fire Weather Operations Coordinator at NIFC, certified fire management agency IMETs may be utilized under special circumstances. All requests for IMETs will be processed through SWCC. The following information will be provided to the requested IMET:

   1. Name of fire
   2. Location of fire
   3. Directions to location where the IMET is to report and Fire Camp Location
   4. Name of Incident Commander, Plans Chief and Fire Behavior Analyst if available.
   5. Request and Resource Order number for IMET
   6. Verification that "Special Needs" section on Resource Order includes authorization for use of cell phone, computer equipment and the All Hazards Meteorological Response System (AMRS).

Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location free of excessive dust, heat and moisture, protection from wind and other elements, table and chair. Transportation and shelter arrangements should be made at the time of request. 120 volt AC power is desirable.

IMETs will carry their own communications equipment and will no longer need a separate order for an ATMU. An ATMU may be ordered by the IMET from the incident. Below is a list of IMETs and ATMUs in the Southwest Area.

1. Southwest Area Incident Meteorologists

Location	Name	Agency	ROSS Unit ID
Albuquerque, NM	Brent Wachter	NWS	NM-ABQW
El Paso, TX	Tom Bird	NWS	NM-EPZW
El Paso, TX	Corey Pieper (T)	NWS	NM-EPZW
Midland, TX	Greg Murdoch	NWS	TX- MAFW
Phoenix, AZ	Valerie Meyers (T)	NWS	AZ-PSRW
Flagstaff, AZ	Mark Stubblefield	NWS	AZ-FGZW
Tucson, AZ	Steve Reedy	NWS	AZ-TWCW
Las Vegas, NV	Jim Harrison	NWS	NV-VEFW

2. Southwest Area ATMUs

CACHE	RESOURCE
Prescott	AZ-01
Prescott	AZ-02
Silver City	NM-01
Silver City	NM-02

C. Briefings – Either NWS or SWCC meteorologists will conduct briefings upon request, time and resources permitting. SWCC meteorologists will provide briefings for strategic planning purposes and will refer the requesting entities to the local NWS office or offices for specific, operationally oriented information.

D. Fire Weather Conference Calls

1. Fire Weather Conference Calls (FWCCs) will be hosted by Southwest Area Predictive Services for the purposes of enhanced situational awareness and increased communication regarding forecast coordination.

2. FWCC's will be held daily during peak fire season, periods of enhanced fire activity or potential, and other critical fire weather situations as appropriate.

3. WFO's, NWS western and southern regional and national fire weather program personnel, the SPC, and deployed IMETs will be invited and encouraged to participate, though participation is entirely optional for all parties.

4. Initiation and cancellation of daily FWCC's will be accomplished through phone or e-mail notification of above parties by Predictive Services. It will be the responsibility of the WFO's to pass along the information to any IMET's deployed within their CWFA's.

5. Once initiated, calls will be held daily at 11:45 am MDT (1745 UTC) daily until they are canceled.

6. Calls will be run by Predictive Services and will follow the format below. All attempts will be made to keep the calls to 15 minutes or less.

    a) Overview of fire activity and fire potential situation by Predictive Services
    b) Regional synopsis of current and expected fire weather situation by Predictive Services, focusing on Critical Fire Weather patterns and/or other pertinent forecast concerns from a Geographic Area perspective.
    c) Round robin where all participants will have the opportunity to ask questions and share information regarding forecast concerns, forecast differences, etc.

7. Recordings of daily FWCC's will be available for playback via the Internet.

8. Details on logistics regarding access to the conference calls and the call recordings will be provided when the FWCC's are initiated by Predictive Services.

VII. EFFECTIVE DATES ON THE AOP

Roughly May 1, 2006 to April 15, 2007.

Strictly, this AOP shall be effective on the date the last signature is placed on the signature section and it will remain in effect until the date the last signature is placed on the signature page the following year. Updates or amendments may be added in the interim upon agreement of all signatories.

VIII. AGENCY SIGNATURES (*On file*)

_____ _____

Chair, Predictive Services Committee — Date
Southwest Area Coordinating Group

Chief, Meteorological Services Division — Date
NWS Western Region Headquarters

Manager, Regional Fire and Aviation Programs — Date
NWS Southern Region Headquarters

IX. APPENDICES

A. APPENDIX – FORECAST PARAMETER DEFINITIONS

1. General Parameters

Sky/weather – Cloud cover and weather. Weather could include rain, snow, showers, thunderstorms, etc. Cloud cover is as follows

Clear	6% or less cloud cover
Mostly Clear/Mostly Sunny	7% - 31% cloud cover
Partly cloudy/Partly Sunny	32% - 69% cloud cover
Mostly Cloudy	70% - 94% cloud cover
Cloudy/Overcast	94% or greater cloud cover

Temperature and 24 hour trend – Dry bulb temperature extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Humidity and 24 hour trend – Relative humidity extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Wind - 20 foot RAWS standard – Surface wind speed and direction as altered by local terrain and surface roughness and measured per instrumentation and siting standards set by NWCG for the RAWS program and NFDRS. In practice, surface wind forecasts produced based on the ASOS standard will be reduced by 20% to obtain 20 ft. winds, except in cases where wide open rangeland or desert is predominant. This same comparison will be used in considering stations other than RAWS to validate forecasts.

10,000 foot MSL Wind – Synoptic scale wind speed and direction representative of winds at roughly 10,000 feet above mean sea level, which are generally unaltered by surface frictional effects. Equivalent to “ridgetop wind”, “wind aloft”, “free-air wind” and “general wind”.

Chance of Rain – Probability of occurrence of 0.01” or greater liquid equivalent precipitation. In the case of convective cells, this will pertain to the areal coverage of cells producing rainfall.

Haines Index – A numerical means to indicate the potential for existing large wildfires to experience extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The Index combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at the lower level. For most of the Southwest Area, the levels used are 700 mb (about 10,000 ft) and 500 mb (about 18,000 ft). The drier and more unstable the atmosphere, the higher the Haines Index and the potential for extreme fuel driven fire behavior. Haines Index values vary from 2 to 6 and classifications are shown below:

HAINES INDEX	POTENTIAL FOR LARGE FIRE GROWTH
2 or 3	Very Low
4	Low
5	Moderate
6	High

(Haines Index does **not** include the effects of wind on fire spread.)

APPENDIX A - FORECAST PARAMETER DEFINITIONS (VENTILATION)

2. Ventilation

Basic ventilation information is used by the states of Arizona and New Mexico in considering the potential for smoke impacts from wildland fires. The following are terms and definitions necessary to understanding ventilation data and values:

Mixing height or mixing depth: The height to which relatively vigorous mixing occurs due to heating. Units are in feet above ground level (AGL), with ground level being the elevation above mean sea level (MSL) of the upper-air site. It is important that wildland fire managers note the difference in elevation between the burn site and the referenced upper-air sight, and modify the provided mixing depths accordingly.

Transport winds: A measure of the average rate of the horizontal transport of air within the mixing layer. Units are in knots (1 knot = 1.15 mph). An average wind direction (the direction from which the wind is blowing) is provided. If winds are light and variable as they likely will be in a critical situation, then it may be best to consider the normal drainage winds.

Ventilation: The product of the mixing height and the transport wind speeds. It is a measure of the volume rate of horizontal transport of air within the mixing layer per unit distance normal to the winds. Units are in knot-feet, though some regulatory entities use meters^2/second. Ventilation values are established at a State level and used as breakpoints for general Ventilation or Dispersion Categories that are used for smoke management or regulatory purposes.

Ventilation (Dispersion) Categories and Values		
Adjective Category	Knot - Feet	Meters^2/Second
ARIZONA		
Excellent	$\geq$ 100,000	$\geq$ 15,700
Very Good	70,000 – 99,999	11,000 – 15, 699
Good	40,000 – 69,000	6,300 – 10,999
Fair	20,000 – 39,999	3,100 – 6,299
Marginal	8,500 – 19,999	1,300 – 3,099
Poor	< 8,500	< 1,300
NEW MEXICO		
Excellent	$\geq$ 150,000	$\geq$ 23,500
Very Good	100,000 – 149,999	15,700 – 23,499
Good	60,000 – 99,999	9,400 – 15,699
Fair	40,000 – 59,999	6,300 – 9,399
Poor	< 40,000	< 6,300

APPENDIX A – FORECAST PARAMETER DEFINITIONS (LAL)

3. Lightning Activity Level (LAL)

LIGHTNING ACTIVITY LEVEL GUIDE

			Individual storm cell cloud to ground lightning discharges		
LAL	**Cloud and Storm Development**	**Areal Coverage**	**Counts [1]cg/5 min**	**Counts [1]cg/15 min**	**Average [1]cg/min**
1	No thunderstorms	None	----	----	----
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	<15 %	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	15-24 %	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	25-50 %	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>50 %	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	>15 %	----	----	----

[1] Cloud-to-ground lightning discharges

B. APPENDIX – NWS FORECAST EXAMPLES

1. Narrative Standard Format – Morning Issuance

```
FNUS55 KABQ 311526
FWFABQ

FIRE WEATHER PLANNING FORECAST FOR NORTH AND CENTRAL NEW MEXICO
NATIONAL WEATHER SERVICE ALBUQUERQUE NM
800 AM MST FRI JAN 31 2003

.DISCUSSION...UPPER LEVEL RIDGE PROVIDES DRY CONDITIONS THROUGH
THE WEEKEND. LOOK FOR THE RIDGE TO BREAK DOWN EARLY NEXT WEEK
WITH AN UPTICK IN WINDS AS THE UPPER LEVEL FLOW STRENGTHENS.
HUMIDITIES ARE EXPECTED TO DROP TO BELOW 15 PERCENT ACROSS
WESTERN NEW MEXICO EARLY NEXT WEEK.

NMZ101-312130-
NEW MEXICO FIRE WEATHER ZONE 101
NORTHWEST PLATEAU/FARMINGTON BLM/ABZ-
830 AM MST FRI JAN 31 2003

.TODAY...
SKY/WEATHER.............MOSTLY SUNNY.
MAX TEMPERATURE.........48-53
        24 HR TREND.....DOWN 3 DEGREES.
MIN HUMIDITY............22-28 PCT.
        24 HR TREND.....DOWN 2 PCT.
WIND...20 FOOT..........TERRAIN DOMINATED 5 TO 10 MPH.
10000 FT MSL WIND.......NORTHWEST 10 MPH.
CHANCE OF PRECIP........0 PCT.
LAL.....................1.
HAINES INDEX............3 VERY LOW.
MIXING HEIGHT...........2600 FT AGL.
TRANSPORT WINDS.........NORTHWEST 5 KNOTS.
VENTILATION CAT.........POOR/13000 KT-FT.

.TONIGHT...
SKY/WEATHER.............MOSTLY CLEAR.
MIN TEMPERATURE.........32-40.
        24 HR TREND.....UP 2 DEGREES.
MAX HUMIDITY............55-65 PCT.
        24 HR TREND.....NO CHANGE.
WIND...20 FOOT..........TERRAIN DOMINATED 5 TO 10 MPH.
10000 FT MSL WIND.......SOUTHWEST 10 MPH.
CHANCE OF PRECIP........0 PCT.
LAL.....................1.
HAINES INDEX............4 LOW.

.SATURDAY...
SKY/WEATHER.............MOSTLY SUNNY.
MAX TEMPERATURE.........48-56.
        24 HR TREND.....UP 1 DEGREE.
MIN HUMIDITY............19-24 PCT.
        24 HR TREND.....DOWN 3 PCT.
WIND...20 FOOT..........WEST 5 TO 10 MPH.
10000 FT MSL WIND.......WEST 13 MPH.
```

```
CHANCE OF PRECIP.........0 PCT.
LAL.....................1.
HAINES INDEX............4 LOW.
MIXING HEIGHT...........2900 FT AGL.
TRANSPORT WINDS.........SOUTHWEST 5 KNOTS.
VENTILATION CAT.........POOR/14500 KT-FT.

.FORECAST DAYS 3 THROUGH 5...
.SUNDAY...PARTLY CLOUDY. HIGHS 50 TO 55. TERRAIN DOMINATED 5 TO 10 MPH.
MINIMUM HUMIDITIES 15 TO 20 PERCENT.
.MONDAY...MOSTLY CLEAR. HIGHS 52 TO 57. SOUTHWEST WINDS 10 TO 15 MPH. MINIMUM
HUMIDITIES 12 TO 18 PERCENT.
.TUESDAY...MOSTLY CLEAR. HIGHS 55 TO 60. SOUTHWEST WINDS 10 TO 20 MPH.
MINIMUM HUMIDITIES 10 TO 16 PERCENT.

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Narrative Standard Format – Afternoon Issuance

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FIRE WEATHER PLANNING FORECAST FOR NORTH AND CENTRAL NEW MEXICO
NATIONAL WEATHER SERVICE ALBUQUERQUE NM
330 PM MST FRI FEB 28 2003

.DISCUSSION...UPPER LEVEL RIDGE DOMINATES THE WEATHER
ACROSS NEW MEXICO THROUGH THE WEEKEND. THUS DRY CONDITIONS
WITH LITTLE CHANGE IN THE TRENDS. WINDS PICK UP EARLY NEXT
WEEK AS THE RIDGE BREAKS DOWN AND THE FLOW ALOFT STRENGTHENS.

NMZ103-291530-
NEW MEXICO FIRE WEATHER ZONE 103
SANGRE DE CRISTO MOUNTAINS/EASTERN CARSON AND SANTA FE NF/SNZ-TAZ-
330 PM MST FRI FEB 28 2003

.TONIGHT...
SKY/WEATHER.............MOSTLY CLEAR.
MIN TEMPERATURE.........
        ABOVE 8000 FT....26-32
        BELOW 8000 FT....23-30
        24 HR TREND......UP 3 DEGREES.
MAX HUMIDITY............
        ABOVE 8000 FT....40-50 PCT
        BELOW 8000 FT....51-68 PCT
        24 HR TREND......DOWN 5 PCT.
WIND...20 FOOT..........SOUTHWEST 5 TO 10 MPH.
10000 FT MSL WIND.......SOUTHWEST 15 MPH.
CHANCE OF PRECIP........0
LAL.....................1
HAINES INDEX............4 LOW.

.SATURDAY...
SKY/WEATHER.............MOSTLY SUNNY.
MAX TEMPERATURE.........
        ABOVE 8000 FT....40-48
        BELOW 8000 FT....49-56
        24 HR TREND......UP 3 DEGREES.
MIN HUMIDITY............
        ABOVE 8000 FT....18-22 PCT
        BELOW 8000 FT....14-19 PCT
        24 HR TREND......DOWN 2 PCT.
WIND...20 FOOT..........TERRAIN DOMINATED 5 TO 10 MPH.
10000 FT MSL WIND.......WEST 12 MPH.
CHANCE OF PRECIP........0
LAL.....................1
HAINES INDEX............4 LOW.
MIXING HEIGHT...........4800 FT AGL
TRANSPORT WINDS.........SOUTHWEST 10 KNOTS.
VENTILATION CAT.........FAIR/48000 KT-FT.

.SATURDAY NIGHT...
SKY/WEATHER.............PARTLY CLOUDY.
MIN TEMPERATURE.........
        ABOVE 8000 FT....26-34
        BELOW 8000 FT....30-39
        24 HR TREND......UP 5 DEGREES.
```

```
MAX HUMIDITY.............
        ABOVE 8000 FT....52-58 PCT
        BELOW 8000 FT....42-50 PCT
        24 HR TREND......DOWN 4 PCT.
WIND...20 FOOT...........TERRAIN DOMINATED 5 TO 10 MPH.
10000 FT MSL WIND........WEST 10 TO 15 MPH.
CHANCE OF PRECIP.........0
LAL......................1
HAINES INDEX.............4 LOW.

.SUNDAY...
SKY/WEATHER..............PARTLY CLOUDY.
MAX TEMPERATURE..........
        ABOVE 8000 FT....42-49
        BELOW 8000 FT....50-57
        24 HR TREND......UP 2 DEGREES.
MIN HUMIDITY.............
        ABOVE 8000 FT....15-20 PCT
        BELOW 8000 FT....11-16 PCT
        24 HR TREND......DOWN 2 PCT.
WIND...20 FOOT...........WEST 5 TO 10 MPH.
10000 FT MSL WIND........WEST 15 MPH.
CHANCE OF PRECIP.........0
LAL......................1
HAINES INDEX.............5 MODERATE.
MIXING HEIGHT............5400 FT AGL
TRANSPORT WINDS..........SOUTHWEST 10 KNOTS.
VENTILATION CAT..........FAIR/54000 KT-FT.

.FORECAST DAYS 3 THROUGH 5...
.MONDAY...MOSTLY CLEAR. HIGHS 45 TO 65. SOUTHWEST WINDS 10 TO 15 MPH. MINIMUM
HUMIDITIES 8 TO 18 PERCENT.
.TUESDAY...PARTLY CLOUDY. HIGHS 47 TO 67.  SOUTHWEST WINDS 10 TO 20 MPH.
MINIMUM HUMIDITIES 9 TO 19 PERCENT.
.WEDNESDAY...MOSTLY CLEAR. HIGHS 45 TO 65.  WEST WINDS 10 TO 20 MPH. MINIMUM
HUMIDITIES 11 TO 21 PERCENT.

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(Additional forecast groups as necessary. Extended forecast may be omitted from each zone grouping and included at the end of the product and generalize to apply to the entire forecast area.)

B. APPENDIX – NWS FORECAST EXAMPLES

2. Tabular Standard Format – Morning Issuance

```
FNUS54 KAMA 241241
FWFAMA

TEXAS/OKLAHOMA PANHANDLES FIRE WEATHER PLANNING FORECAST
NATIONAL WEATHER SERVICE AMARILLO TX
700 AM CST MON FEB 24 2003

.DISCUSSION...A COLD SURFACE RIDGE OF HIGH PRESSURE WILL REMAIN
IN PLACE ACROSS THE SOUTHERN PLAINS TODAY AND TONIGHT...AND
WILL DRIFT EASTWARD ON TUESDAY.

OKZ001-250000-
CIMARRON-
INCLUDING THE CITY OF...BOISE CITY
700 AM CST MON FEB 24 2003

                      TODAY        TONIGHT      TUE

CLOUD COVER           CLOUDY       CLOUDY       MCLDY
PRECIP TYPE           SNOW         SNOW         SNOW
CHANCE PRECIP (%)     40           30           20
TEMP (24H TREND)      15 (-11)     11 (+8)      31
RH % (24H TREND)      66 (+14)     94 (-3)      46
20FTWND-AM(MPH)       NE 12                     S 12
20FTWND-PM(MPH)       NE 11        E  6         S 13
PRECIP AMOUNT         0.09         0.04         0.00
MIXING HGT (FT-AGL)   5890                      4890
TRANSPORT WND (KTS)   NE  4                     E 10
LAL                   1            1            1
HAINES INDEX          3            3            3


.EXTENDED FORECAST...
.TUESDAY NIGHT...MOSTLY CLOUDY. CHANCE OF SNOW. LOWS IN THE LOWER
20S. SOUTHEAST WINDS 5 TO 10 MPH.
.WEDNESDAY...MOSTLY CLOUDY. CHANCE OF SNOW. HIGHS IN THE LOWER 30S.
NORTHEAST WINDS 10 TO 15 MPH.
.WEDNESDAY NIGHT...MOSTLY CLOUDY. SLIGHT CHANCE OF SNOW. LOWS IN THE
LOWER 20S. LIGHT WINDS.
.THURSDAY...MOSTLY CLOUDY. CHANCE OF SNOW. HIGHS IN THE MID 30S.
LIGHT WINDS.
.THURSDAY NIGHT...MOSTLY CLOUDY. CHANCE OF SNOW. LOWS IN THE LOWER
20S. SOUTHEAST WINDS 5 TO 10 MPH.
.FRIDAY...MOSTLY CLOUDY. CHANCE OF SNOW. HIGHS IN THE MID 30S.
SOUTHEAST WINDS 5 TO 10 MPH.

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B. APPENDIX – NWS FORECAST EXAMPLES

3. Spot Forecast

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FNUS75 KABQ 241548
FWSABQ

SPOT FORECAST FOR HIGHWAY 4 PROJECT BURN......NPS
NATIONAL WEATHER SERVICE ALBUQUERQUE
848 AM MST MON FEB 24 2003

IF CONDITIONS BECOME UNREPRESENTATIVE, CONTACT THE NATIONAL WEATHER SERVICE.

DISCUSSION...COLDER AIR IN EASTERN NEW MEXICO WILL SEEP WESTWARD
TONIGHT AS MOISTURE AHEAD OF A PACIFIC STORM SYSTEM INCREASES ACROSS
THE SOUTHWEST U.S.

FOR PLANNED IGNITION TIME OF 930 MST 2/24/03
   CLOUDS/WEATHER.....CLOUDY WITH PERIODS OF LIGHT SNOW. UP TO AN
INCH OF NEW SNOW. 8/10 TO 10/10 CLOUD COVER.
   CHC OF PRECIP .....70 PERCENT
   TEMPERATURE........MAX 34
   RELATIVE HUMIDITY..MIN 80 PERCENT
   20 FOOT WIND.......SOUTHWEST 10 TO 15 MPH
   OPTIONAL ELEMENTS..(PER REQUEST)

FOR TONIGHT
   CLOUDS/WEATHER.....CLOUDY WITH PERIODS OF LIGHT SNOW OR FLURRIES.
   CHC OF PRECIP......70 PERCENT
   TEMPERATURE........MIN 26
   RELATIVE HUMIDITY..MAX 100 PERCENT
   20 FOOT WIND.......BECOMING SOUTHEAST 8 TO 12 MPH
   OPTIONAL ELEMENTS..(PER REQUEST)

FOR TUESDAY
   CLOUDS/WEATHER.....CLOUDY WITH PERIODS OF LIGHT SNOW OR FLURRIES.
   CHC OF PRECIP......70 PERCENT
   TEMPERATURE........MAX 34
   RELATIVE HUMIDITY..MIN 80 PERCENT
   20 FOOT WIND.......SOUTH 10 TO 15 MPH
   OPTIONAL ELEMENTS..(PER REQUEST)

FORECASTS FOR WINDS ARE 20 FOOT WIND SPEEDS AND MUST BE ADJUSTED
ACCORDING TO FUEL TYPE AND SHELTERING TO GET EYE LEVEL WIND SPEED.

FORECASTER...EAP

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B. APPENDIX – NWS FORECAST EXAMPLES

4. Red Flag Warning / Fire Weather Watch

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000
WWUS85 KABQ 101433
RFWABQ

RED FLAG WARNING
NATIONAL WEATHER SERVICE ALBUQUERQUE NM
733 AM MST FRI MAR 10 2006

…FIRE WEATHER WATCH FOR SATURDAY CANCELLED ACROSS THE NORTHEAST
PLAINS…

...RED FLAG WARNING IN EFFECT 11 AM THROUGH 7 PM TODAY FOR
CENTRAL PORTIONS OF THE RIO GRANDE VALLEY EASTWARD TO THE ESTANCIA
BASIN AND EASTERN PLAINS FOR STRONG WINDS AND LOW HUMIDITIES...

...FIRE WEATHER WATCH IN EFFECT FOR SATURDAY AFTERNOON ACROSS THE
EAST CENTRAL PLAINS FOR STRONG WINDS AND LOW HUMIDITIES...

.DISCUSSION...VERY STRONG WINDS AND LOW RH LEVELS EXPECTED TODAY
ACROSS MANY LOCALS. OUTSIDE OF THE WARNING AREA...HIGH WINDS ARE ALSO
LIKELY BUT RH LEVELS TO REMAIN ABOVE 15 PERCENT. HIGHER RH LEVELS
ARE ANTICIPATED ON SATURDAY WITH EXCEPTION THE EAST CENTRAL PLAINS
ALONG AND SOUTH OF INTERSTATE 40. WINDS WILL INCREASE SATURDAY
AFTERNOON IN THE EAST PROMPTING THE CONTINUATION OF THE FIRE
WEATHER WATCH. AS MENTION...HIGHER RH LEVELS ACROSS THE NORTHEAST
PLAINS ARE ANTICIPATED THUS CANCELLED THE WATCH FOR THAT ZONE.
GUSTS COULD EXCEED 60 MPH IN MANY LOCATIONS WITH SUSTAINED RANGING
FROM 30 TO 40 MPH FOR SEVERAL HOURS.

NMZ104-110200-
/O.CAN.KABQ.FW.A.0018.060311T1900Z-060312T0000Z/
/O.CON.KABQ.FW.W.0022.060310T1800Z-060311T0200Z/
NEW MEXICO FIRE WEATHER ZONE 104
NORTHEAST PLAINS/EASTERN KIOWA AND RITA BLANCA GRASSLANDS/ABZ-TNZ-
733 AM MST FRI MAR 10 2006

...FIRE WEATHER WATCH IS CANCELLED...
...RED FLAG WARNING REMAINS IN EFFECT FROM 11 AM THIS MORNING TO
7 PM MST THIS EVENING...

THE NATIONAL WEATHER SERVICE IN ALBUQUERQUE HAS CANCELLED THE
FIRE WEATHER WATCH FOR SATURDAY. A RED FLAG WARNING REMAINS IN
EFFECT FROM 11 AM THIS MORNING TO 7 PM MST THIS EVENING.

RELATIVE HUMIDITY OF 15 PERCENT OR LOWER WITH SUSTAINED 20 FOOT
WINDS OF 20 MPH OR HIGHER...AND HIGH FIRE DANGER ARE EXPECTED.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE
FIELD OF THIS RED FLAG WARNING.

$$

NMZ108-110200-
/O.CON.KABQ.FW.W.0022.060310T1800Z-060311T0200Z/
```

/O.CON.KABQ.FW.A.0018.060311T1900Z-060312T0000Z/
NEW MEXICO FIRE WEATHER ZONE 108
EAST CENTRAL PLAINS/WESTERN KIOWA GRASSLANDS BLM/ABZ-SNZ-
733 AM MST FRI MAR 10 2006

...RED FLAG WARNING REMAINS IN EFFECT FROM 11 AM THIS MORNING TO
7 PM MST THIS EVENING...
...FIRE WEATHER WATCH REMAINS IN EFFECT SATURDAY AFTERNOON...

A RED FLAG WARNING REMAINS IN EFFECT FROM 11 AM THIS MORNING TO
7 PM MST THIS EVENING. A FIRE WEATHER WATCH REMAINS IN EFFECT
SATURDAY AFTERNOON.

RELATIVE HUMIDITY OF 15 PERCENT OR LOWER WITH SUSTAINED 20 FOOT
WINDS OF 20 MPH OR HIGHER...AND HIGH FIRE DANGER ARE EXPECTED.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE
FIELD OF THIS RED FLAG WARNING.

$$

NMZ103-106-107-110200-
/O.CON.KABQ.FW.W.0022.060310T1800Z-060311T0200Z/
NEW MEXICO FIRE WEATHER ZONE 103
NORTHEAST HIGHLANDS/EASTERN CARSON AND SANTA FE NF/SNZ-TAZ-
NEW MEXICO FIRE WEATHER ZONE 106
MIDDLE RIO GRANDE VALLEY/ALBUQUERQUE-SOCORRO BLM/ABZ-GLZ-
NEW MEXICO FIRE WEATHER ZONE 107
SANDIA-MANZANO AND GALLINAS MOUNTAINS/EASTERN CIBOLA NF/ABZ-
733 AM MST FRI MAR 10 2006

...RED FLAG WARNING REMAINS IN EFFECT FROM 11 AM THIS MORNING TO
7 PM MST THIS EVENING...

A RED FLAG WARNING REMAINS IN EFFECT FROM 11 AM THIS MORNING TO
7 PM MST THIS EVENING.

RELATIVE HUMIDITY OF 15 PERCENT OR LOWER WITH SUSTAINED 20 FOOT
WINDS OF 20 MPH OR HIGHER...AND HIGH FIRE DANGER ARE EXPECTED.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE
FIELD OF THIS RED FLAG WARNING.

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B. APPENDIX – NWS FORECAST EXAMPLES

5. NFDRS

a. **ZONE/FCST*** Shows whether this forecast is 24 hour trend (ZONE) or specific forecast values (FCST). Trend forecasts can apply to either NFDRS zones or individual stations. Specific point forecast values apply only to individual NFDRS stations and are done where only a few observations are available.

b. **YYMMDD*** Year, month, and day valid forecast time.

c. **NO*** NFDRS Zone Number (or individual NFDRS station number)

d. **13*** Always 1300 LST

e. **WX*** State of Weather valid at 1300 LST tomorrow. Valid entries are:

0 clear
1 scattered clouds (1/8 to 4/8)
2 broken clouds (5/8 to 7/8)
3 overcast clouds (more than 7/8)
4 foggy
5 drizzle
6 raining
7 snowing or sleeting
8 showers (in sight or at the station)
9 thunderstorm
(Categories 5, 6, or 7 sets NFDRS index to 0)

f. **TEMP*** Temperature in deg F valid at 13 LST (or temperature trend + or -)

g. **RH*** Relative humidity in percent valid at 13 LST (or RH trend + or -)

h. **LAL1#** Lightning Activity Level 1400 LST to 2300 LST

i. **LAL2#** Lightning Activity Level 2300 LST to 2300 LST

j. **WIND*** Wind speed in mph valid at 13 LST (or wind speed trend + or -, 20 ft level/10 minute average)

k. **10HR** 10 hour timelag fuel moisture in percent valid at 13 LST (or trend + or -)

l. **Tx** Max temperature from 1300 LST to 1300 LST tomorrow

m. **Tn** Min temperature from 1300 LST to 1300 LST tomorrow

n. **RHx** Max relative humidity from 1300 LST to 1300 LST tomorrow

o. **RHn** Min relative humidity from 1300 LST to 1300 LST tomorrow

p. **PD1*** Precipitation duration in hours 1300 LST to 0500 LST

q. **PD2*** Precipitation duration in hours 0500 LST to 1300 LST

r. **WETFLAG** Y or N. Indicates whether liquid water will be on the fuels at 13 LST. (Use with caution - a "Y" will set all the NFDRS indices to zero!)

*** = Required forecast element for NFDRS # = Required forecast element for select NWS offices only**

The NFDRS Forecast will follow the comma delimited format as shown:

ZONE/FCST,NO,YYMMDD,13,WX,TEMP,RH,LAL1,LAL2,WIND,10HR,TX,TN,RHx,RHn, PD1, PD2,WETFLAG

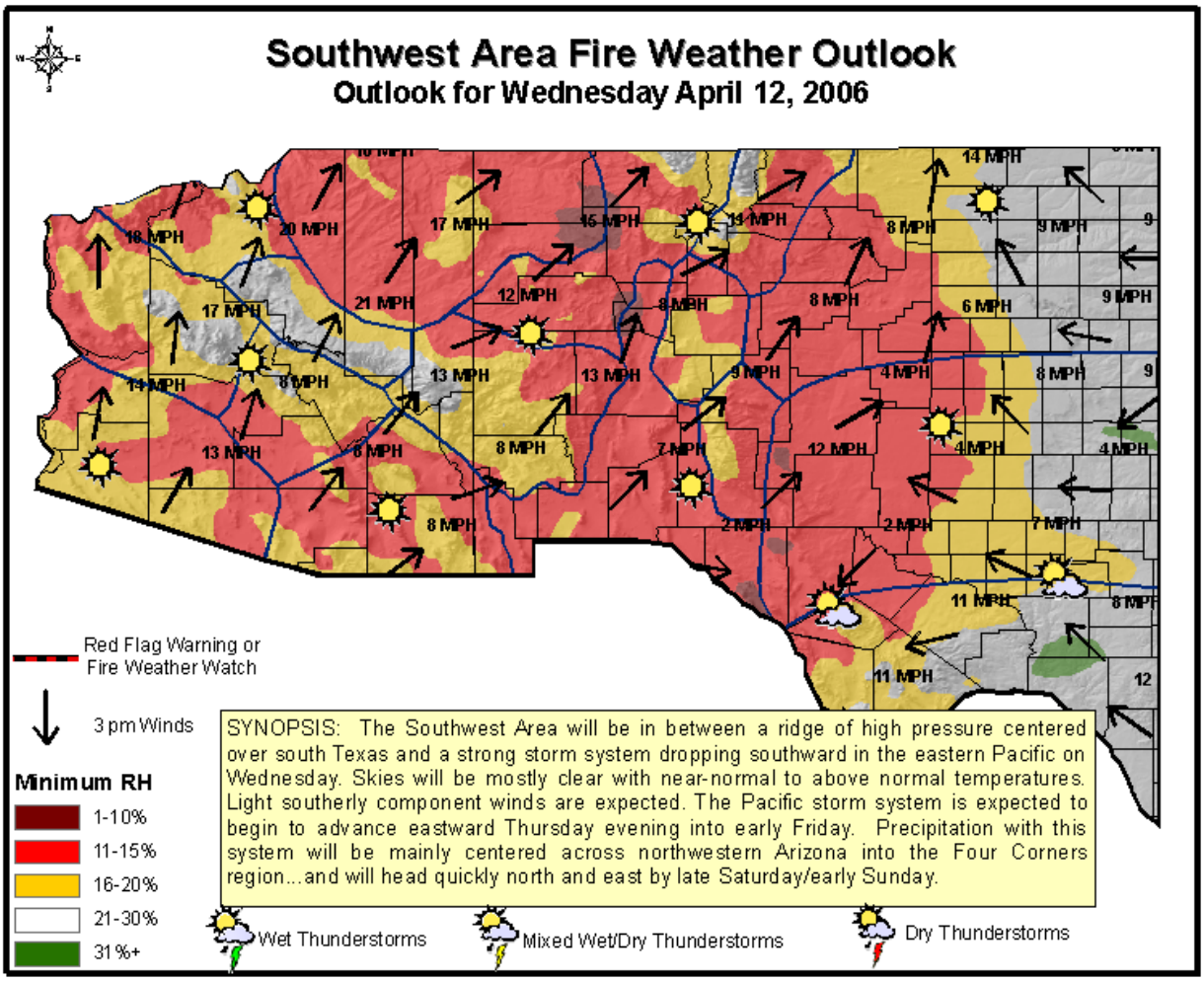
An example of the product, formatted for transmission into AWIPS, is displayed below:

FNUS85 KBOI DDHHMM
FWMBOI

ZONE,403,011027,13,1,-3,0,1,1,0,0,,,,,0,0,N	**Zone trend**
ZONE,404,011027,13,0,3,0,1,1,0,0,,,,,0,0,N	**Zone trend**
ZONE,102708, 011027,13,0,4,-5,1,1,,,,,0,0,N	**Station trend**
FCST,102709,011027,13,0,84,15,1,1,12,5,87,60,50,12,0,0,N	**Station specific**

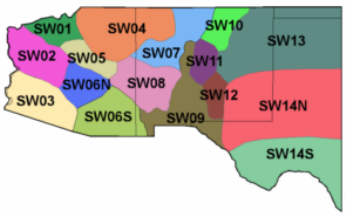
C. APPENDIX – PREDICTIVE SERVICES PRODUCT EXAMPLES

1. Day 1 and Day 2 Fire Weather Outlooks



C. APPENDIX - PREDICTIVE SERVICES PRODUCTS EXAMPLES

2. 7-Day Significant Fire Potential Outlook



Southwest 7 Day Significant Fire Potential

Issued: Tuesday, Apr 11, 2006

Predictive Service Areas	Tue Apr 11	Wed Apr 12	Thu Apr 13	Fri Apr 14	Sat Apr 15	Sun Apr 16	Mon Apr 17
SW01 Northwest AZ							
SW02 West-Central AZ							
SW03 Southwest AZ							
SW04 Four Corners Area							
SW05 Western Mogollon Rim							
SW06N Central AZ/Phoenix Metro							
SW06S Southeast AZ							
SW07 Northwest NM Mtns.							
SW08 White Mtns. & Gila Region							
SW09 South/Cntrl. NM Lowlands				WD			
SW10 Sangre de Cristo Mtns.							
SW11 Central NM Mtns. & Plains							
SW12 South-Central NM Mtns.				WD	WD		
SW13 Northeast NM/NW TX	WD			WD	WD		
SW14N Southeast NM/West TX				WD	WD		
SW14S Southwest TX/Big Bend					WD		

Legend:

Fuel Dryness

- **Moist** - Little if any threat for large fires.
- **Dry** - Low threat for large fires when significant weather is absent.
- **Very Dry** - Moderate threat for large fires when significant weather is absent.
- **Data unavailable.**

Significant Weather Triggers

- **Lightning** - LALs of 3 or higher.
- **WD** **Windy & Dry** - Sustained winds of 20 mph or greater with humidity 15% or less.
- **HD** **Hot & Dry** - Temperatures much above seasonal normals with humidity 15% or less.

"High Risk" Days

- The combination of either "Dry" or "Very Dry" Fuel dryness along with a Significant Weather Trigger.

.PDF Version

Weather Synopsis:
Breezy to windy and dry conditions expected across portions of the eastern plains today as a weather systems moves east out of Colorado. High pressure to build Wednesday and Thursday as a storm system strengthens off the west coast. It will be warmer and generally dry, but high level moisture in advance of the Pacific system may keep humidity values up some. The Pacific system is expected to speed up and move rapid across the four corners by Saturday morning, spreading critical fire weather conditions in the way of strong wind and low humidity across southern and eastern areas Friday and Saturday. Any precipitation should be light and confined mainly to northern Arizona and northwest New Mexico with this system.

Fire Potential Discussion:
General low to moderate threat conditions will continue over southern and eastern areas, though these conditions are gradually spreading north and east. High risk days for large fire activity are expected in these areas on days when windy & dry conditions are expected (per the red "WD" on the chart above). Greenup over parts of southern Arizona, far southeast New Mexico and adjacent west Texas will begin to mitigate significant fire potential in those areas.

Resources:
Southwest Area Preparedness Level is **2** (i.e. Numerous Zones in high fire danger, Areawide ERC between 30-45, potential for large fires greater than one burning period, weather forecast does not predict a sustained increase in fire severity). With any ignition in grass/brush fuels, primarily along eastern NM and western TX, additional resources (primarily engines and air resources) will be needed from adjacent fire agencies or ordered through the SWCC. We currently have 3 heavy air tankers located in New Mexico and 1 in southern Arizona, and 4 SEATS in Arizona and 2 in New Mexico available. However, with the windy conditions forecasted, their effectiveness may be degraded or unable to fly. Type 1 and 2 Incident Management Teams are up and available (2 T1's and 4 T2's) along with some Type 1 crews (8 in service, 1 available in SWA). However, IMT resources are not anticipated to be mobilized during this period due to the nature of grass/brush fires, although T1 crews will be used on limited basis (i.e. short-term, moving from fire to fire, if necessary).

Click here for 7 day ERC, F10, and F100 projections

Click here for 7 day Temperature & RH projections

C. APPENDIX - PREDICTIVE SERVICES PRODUCTS EXAMPLES

3. Monthly Large Fire Potential Outlook

SOUTHWEST AREA

MONTHLY FIRE WEATHER / FIRE DANGER OUTLOOK

Issued for: March 2003

1. POTENTIAL FOR SERIOUS/CRITICAL FIRE PROBLEMS:

COMING MONTH **March**	BELOW NORMAL	**X**	NORMAL	**X**	ABOVE NORMAL	
SEASON	BELOW NORMAL		NORMAL	**X**	ABOVE NORMAL	**X**

2. WEATHER FACTORS:

Current Weather/Drought Situation…

A return to more "normal" El Nino conditions over the last several weeks has lead to at least 3 significant storms that have produced much needed rainfall throughout the Southwest Area (2-3" in AZ). Unfortunately most of the precipitation has been in the form of rain with accumulating snowfall confined to elevations above 8000 feet. Thus, many areas along the Mogollon Rim in Arizona are without significant snowpack. Across the higher elevations of north central New Mexico much of the precipitation has been in the form of snow with over 40" of accumulation at some of the ski resorts since February 1. As a result of the significantly wetter weather pattern, both long and short-term drought indices have shown improvement in the past 30 days.

Weather Outlook…

Moderate El Nino conditions are expected through the end of March. The result will be continued chances for both temperatures and precipitation to be normal to above normal throughout the Southwest Area. The warmer temperatures will constrain the continuous snowpack mostly above 8,500 feet. With an active storm track across the southwest, southeast New Mexico and adjacent southwest Texas will have the greatest likelihood for short term dry and windy conditions between intermittent moisture.

3. FUEL FACTORS:

CURRENT FINE FUELS:

GRASS STAGE	GREEN		CURED	**X**		
NEW GROWTH	SPARSE		NORMAL	**X**	ABOVE NORMAL	

CURRENT 1000-HOUR DEAD FUEL MOISTURE: **18-25%**

AVERAGE 1000-HOUR DEAD FUEL MOISTURE FOR THIS TIME OF YEAR: **18-25%**
CURRENT LIVE FUEL MOISTURE (sage, deciduous, conifer): **70-120%**

4. AVERAGE FIRE OCCURRENCE/ACRES BURNED:

(Average 2000-2002, Cumulative April – September Only)

FIRE OCCURRENCE: N/A

ACRES BURNED: N/A

5. YEAR-TO-DATE FIRE OCCURRENCE/ACRES BURNED:

(Average 2000-2002, Cumulative April – September Only)

FIRE OCCURRENCE: N/A

ACRES BURNED: N/A

6. WRITTEN SUMMARY:

Potential: Below Normal to Normal

General fire danger levels have rescinded to within the below normal to normal range for this time of year due to recent precipitation, though levels across the southeast quadrant of New Mexico remain elevated. Any new ignitions should be held to the initial attack stage. The exception might be on rangelands in the southern portion of the Area, where fuel conditions dry out much sooner than in other parts of the Area.

Large Fires

For the month of March during the period 1991-2002, the SWA experienced a total of 59 large fires (ie. Fires >100 acres). Of this number, 54 were human caused and 5 were ignited by lightning. By year, 1993 stands out as the year with the highest number of large fires at 15. The years 2000 and 1999 had 12 and 10, respectively. Overall, the average number of large fires for the month of March is less than 5.

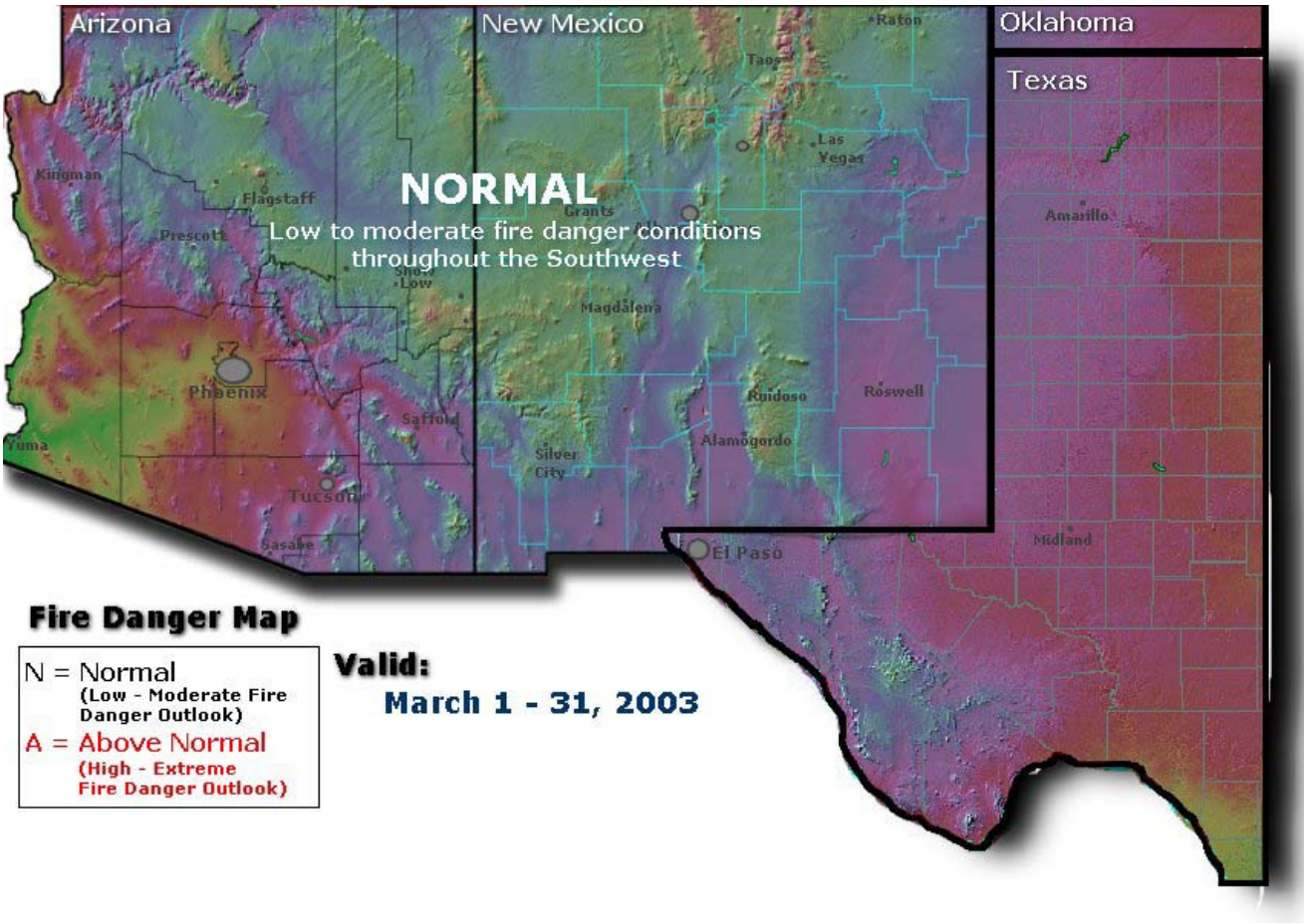
With precipitation continuing to flow into the Area every 5-7 days, fuel conditions are wet enough to keep fire spread rates to a minimum. Thus, expectations are the number of large fires should remain below five for the month.

Mobilization of Resources

Incidents with Teams Assigned: For the same period (1991-2002), only six incidents required the mobilization of a Type 1 or 2 team. Thus, the average number of team assignments during this 12-year period is less than one per year. Of the six assignments, four of them occurred during 2000.

With fire danger expected to be in the below normal to normal range, significant resource mobilization (i.e. team assignment) is not anticipated. As always, though, local engine resources may be needed and should be ready and available.

7. MAP:



C. APPENDIX - PREDICTIVE SERVICES PRODUCTS EXAMPLES

4. Seasonal Outlook

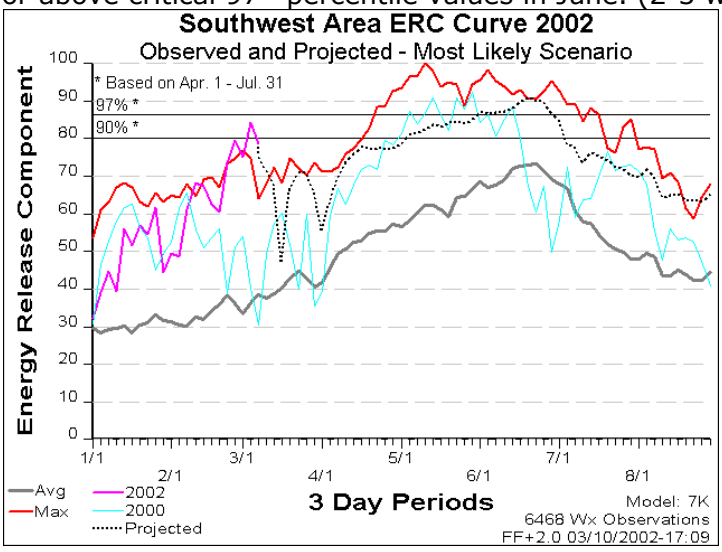
SOUTHWEST AREA - **2002 Fire Season Outlook**

EXECUTIVE SUMMARY

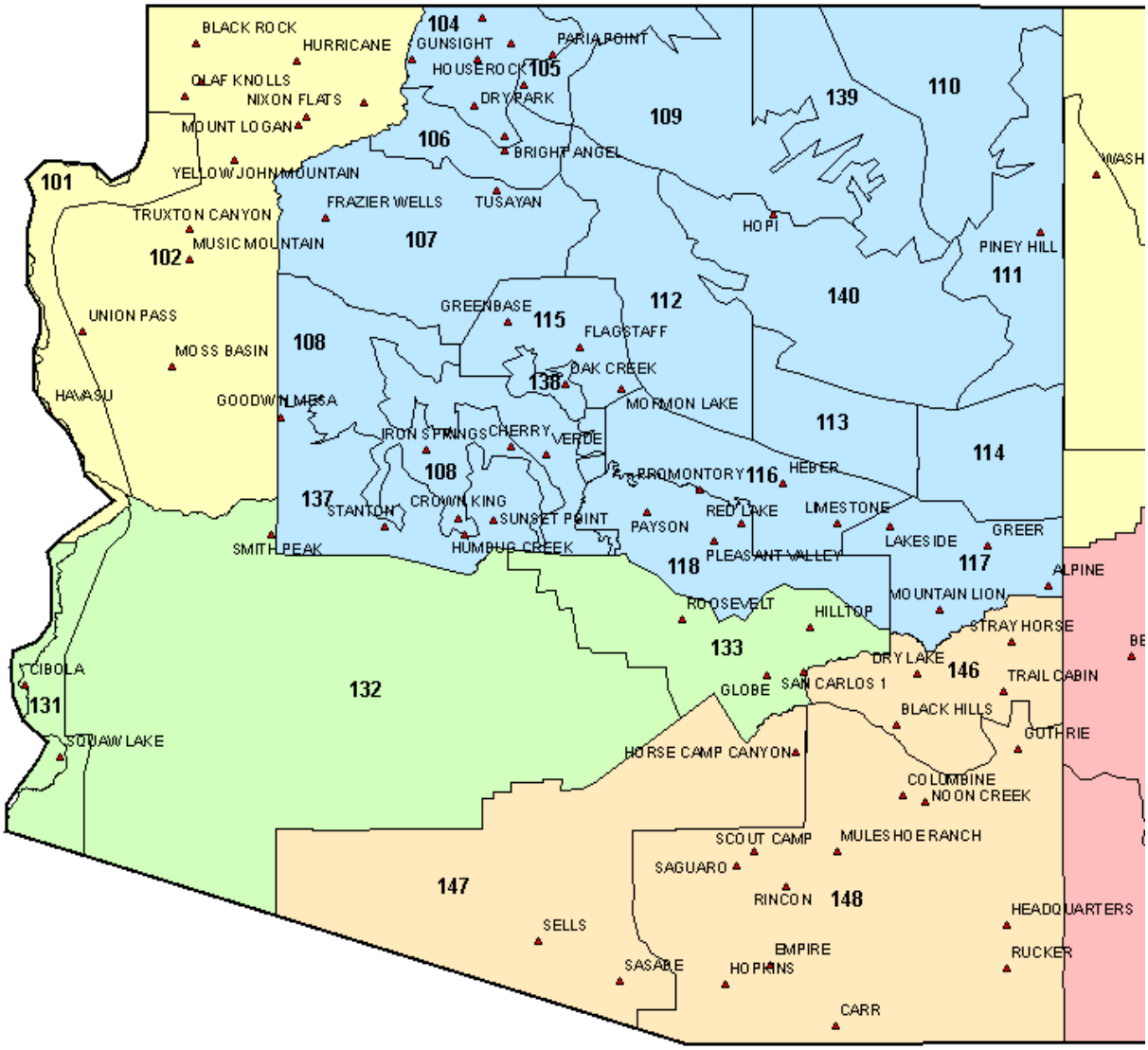
The fire danger across the Southwest Area is expected to be much above normal. This is due to low amounts of winter precipitation and a general forecast of continued warm and dry conditions in early summer, plus a continuance of multi-year drought in some areas. The following highlights are based on a consensus "most likely" scenario. The complete seasonal outlook follows this summary below.

Key factors for this season are:

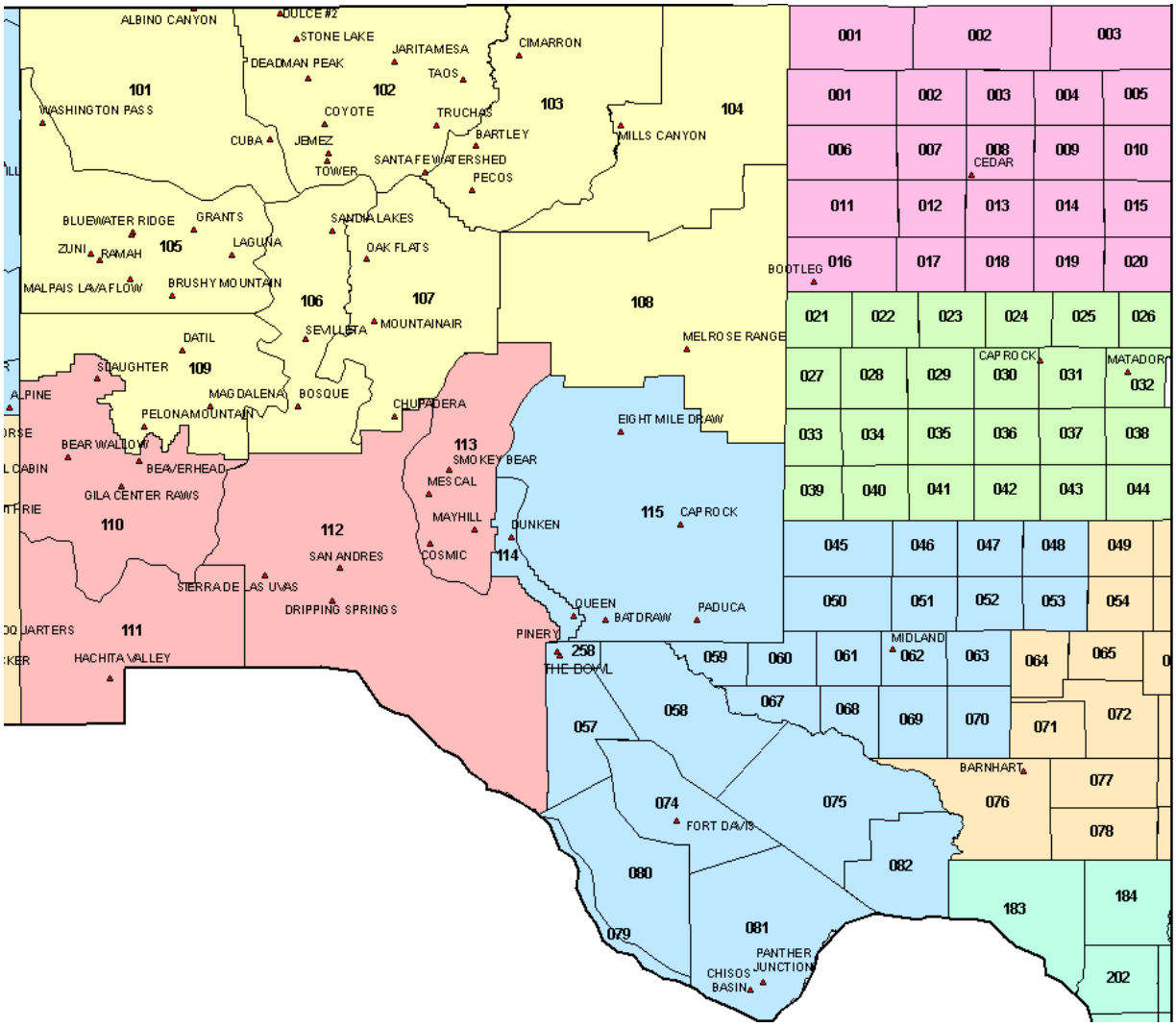
- Expect initial attack activity through April, May, and June to be above normal at all elevation levels.
- Large fire potential will be above normal all season.
- Some precipitation events are anticipated in March and April; the impact will only delay the season, but not reduce seasonal severity.
- Chances for large-scale strong wind events (Red Flag) should be below normal in May and June.
- It is likely that there will be a transition into an El Niño pattern this year, but it will not have any impact on the fire season.
- There is no indication that the monsoon will begin early or late, or be especially weak or strong.
- Annual and perennial fuels will be more susceptible to carrying surface fire than would be normally expected.
- Given the expected state of both herbaceous and dead fuels, a higher probability of ignition will exist from any ignition source.
- By May, it is expected that 1000 hour fuel moisture will reach near record low values.
- Area average ERC values will near or exceed record levels several times throughout the season.
    - Near or above critical 90th percentile values from mid April through early July. (8-10 weeks)
    - Near or above critical 97th percentile values in June. (2-3 weeks)



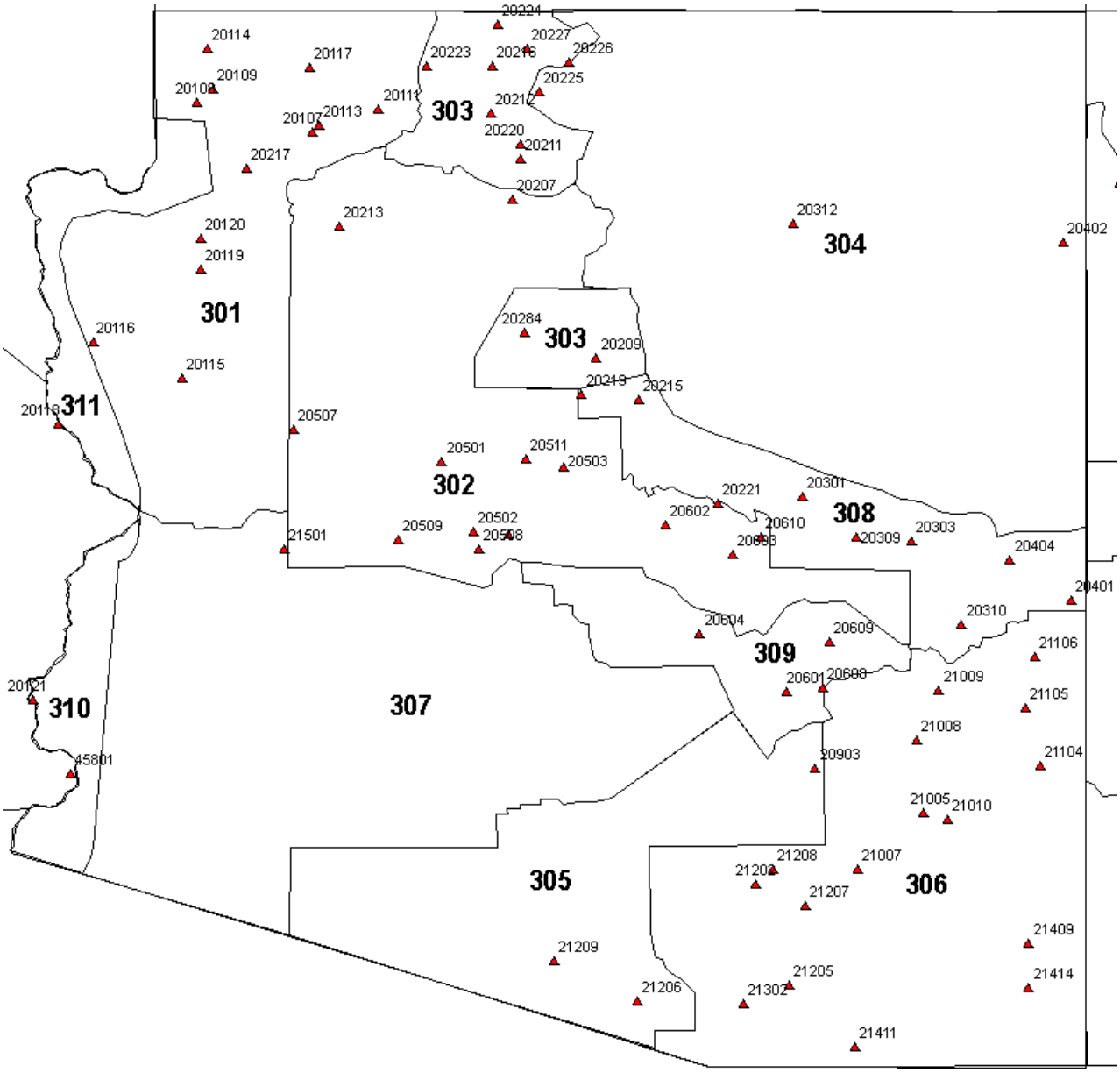
D. APPENDIX – NARRATIVE FIRE WEATHER ZONE MAPS (Arizona)



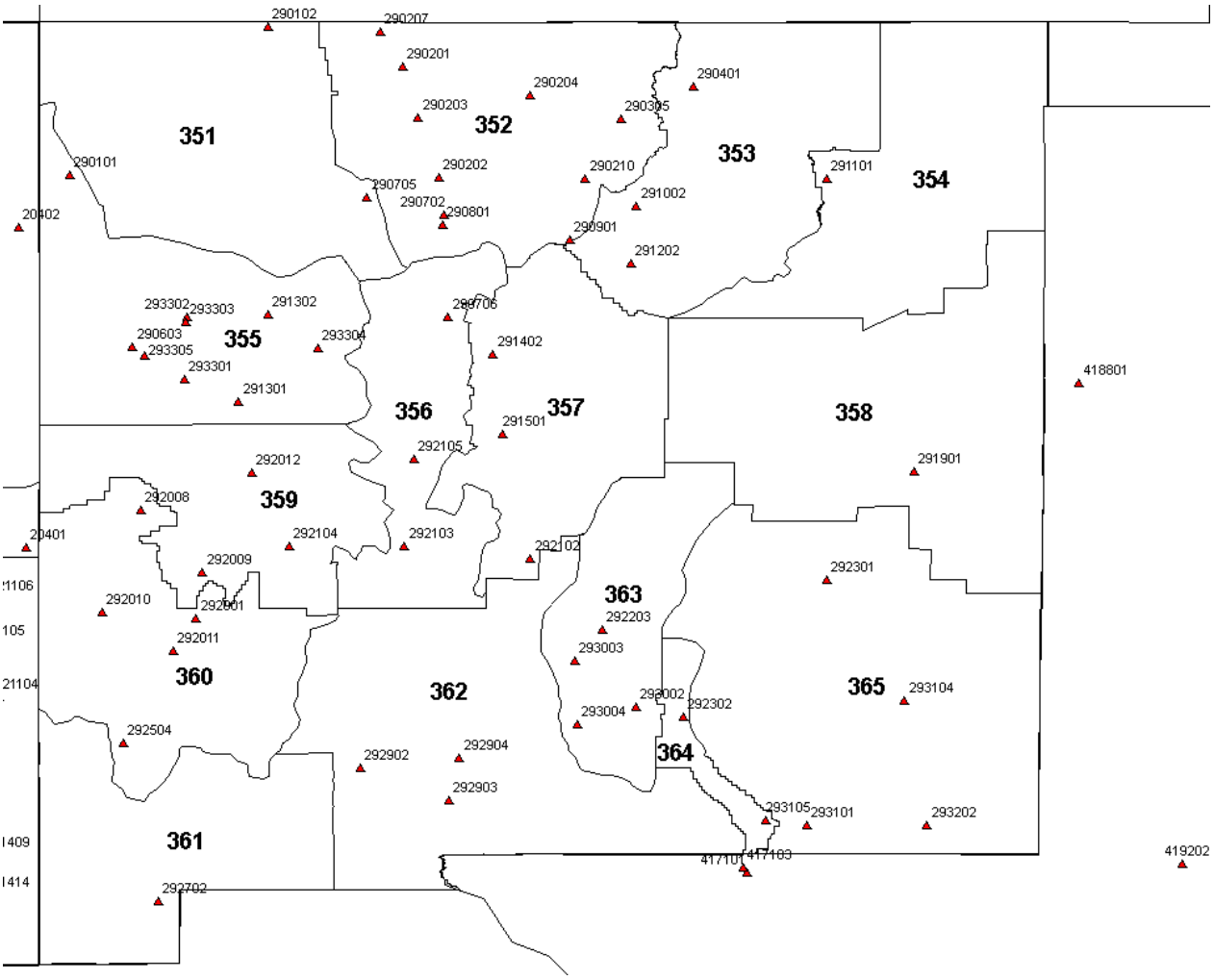
D. APPENDIX - NARRATIVE FIRE WEATHER ZONE MAPS (New Mexico, Texas & OK)



E. APPENDIX – NFDRS ZONE MAPS (Arizona)



E. APPENDIX – NFDRS ZONE MAPS (New Mexico)



F. APPENDIX – Experimental Digital Services from the National Weather Service

Gridded Weather Input for Fire Area Simulation Model (FARSITE)

Product Description Document (PDD)

Part I – Mission Connection

a. Product Description – FARSITE is a deterministic model developed and used by land management agencies. FARSITE simulates the spatial and temporal spread and behavior of fires under conditions of heterogeneous terrain, fuels, and weather. Required FARSITE weather input consists of maximum and minimum relative humidity, maximum and minimum temperature, daily precipitation, wind speed and direction and cloud cover. FARSITE is an important tool that fire agencies use to help keep firefighters safe. Pursuant to the NWS mission of saving lives and property, NOAA/NWS forecasters have been manually supplying FARSITE weather input to fire managers for a number of years.

FARSITE is an important tool for land management agencies in Western Region. This model is used to help plan safe and efficient suppression tactics for wildland fires, to better manage prescribed burns so that these fires to not become out-of-control wildland fires and to allow increased used of Wildland Fire Use (WFU) projects. Land management agencies are increasing use of WFU projects to achieve greater public lands fuels reduction goals at less taxpayer expense. Consequently, Western Region WFOs are receiving increasing requests from fire managers for FARSITE weather input. Increased automation is desired to reduce the workload involved in fulfilling these requests.

An IFPS formatter is available to provide FARSITE weather input automatically from the NDFD (Gibson, Gorski, 2004) based on the latitude and longitude of the fire as provided by the requesting fire official. This formatter will be available for download from the Western Region applications server and is easily implemented on any local AWIPS platform. FARSITE output from this formatter has been supplied to the requesting fire agency by a variety of means. In 2006, all Western Region WFOs will make FARSITE weather input available to the requesting official on the WFO fire weather web page.

b. Product Type - Experimental

c. Purpose – Establish a regional standard for providing requested FARSITE weather data via production from NDFD and access via WFO fire weather web pages. This will allow fire weather customers easier access to needed FARSITE weather data and will reduce workload on Western Region WFOs. Fire agency customers request FARSITE data via the web or telephone call to their servicing WFO.

d. Audience – Fire managers using FARSITE are the customers of this data and web page option. Most customers will be managers in the U.S. Forest Service, Bureau of Land Management, National Park Service and other federal and state land management agencies.

e. Presentation Format – FARSITE weather data support is presented in the standard format needed by this fire spread model. It is simple text arranged vertically by date and horizontally by weather element:

WTR (weather) output:

12 08 00 0700 1600 10 27 99 38 9870

12 09 00 0700 1600 10 33 73 43 9870

12 10 00 0700 1600 13 36 72 33 9870

12 11 00 0700 1600 14 37 66 33 9870

12 12 00 0700 1600 14 35 67 29 9870

12 13 00 0700 1600 13 33 64 30 9870

12 14 00 0700 1600 12 31 70 39 9870

12 15 00 0700 1600 12 31 71 39 9870

WND(wind output):

12 22 0000 11 200 44

12 22 0300 13 210 53

12 22 0600 17 220 70

12 22 0900 14 220 65

12 22 1200 11 220 56

12 22 1500 09 260 55

12 22 1800 08 310 52

12 22 2100 08 300 52

12 23 0000 08 240 52

12 23 0300 08 270 58

12 23 0600 07 310 70

12 23 0900 09 330 67

12 23 1200 10 001 60

12 23 1500 11 010 47

f. Feedback Method – The MIC solicits feedback from the fire agencies via telephone, e-mail and customer outreach visits.

g. Example - National Weather Service - NWS Salt Lake City (http://www.wrh.noaa.gov/slc/projects/ifp/data/FARSITE/FARSITE.php)

h. PDD Approved by Vickie Nadolski, Director, Western Region

Part II – Technical Description

a. Format and Science Basis – The methodology of delivering FARSITE weather support information was developed to ease the workload on the WFO and increase convenience for fire weather customers to request and access the information. The IFPS formatter utilizes the published WFO Digital Forecast Database (DFD) to generate this weather data in the format required by FARSITE. Prior to being published, the forecaster reviews and if necessary, adjusts the DFD to ensure consistency and accuracy with other products and the current assessment of expected meteorological conditions during the product valid time. It should be noted that this PDD represents a more efficient production and dissemination method for data that has been supplied by NOAA/NWS to fire weather customers for a number of years. The data type is not new.

b. Availability – FARSITE weather data will be generated upon request by a fire agency official, usually concurrent with a spot forecast request. When a forecaster creates a draft spot forecast from the DFD, FARSITE data will be automatically generated and sent to the WFO fire weather web page. If a FARSITE user does not need a full spot forecast, they can call the WFO. The forecaster can then produce FARSITE data by entering fire location and name in a small AWIPS GIU. Again, the data is produced and sent to the web automatically.

c. Additional Information – Information regarding the availability of FARSITE weather data on Western Region WFO fire weather web pages, as well as the procedure for requesting this support, will be provided in all 2006 Western Region Fire Weather Annual Operating Plans (AOP).

Point Forecast Matrix Product (PFM) for RAWS sites

a. Limited number of PFM's will be produced across Region III during the 2006 calendar year.

b. Graphical map containing links to PFM sites will be found on each office's fire weather web site. SWCC will also provide a Region III wide graphical map for which the product will be linked.

c. Some format differences within the product may be found across Region III.

Example format link: http://www.wrh.noaa.gov/vef/firematrix.php?loc=orientalwash
Example format link: http://www.srh.noaa.gov/maf/Fire/getpfw.php?loc=midland

d. Forecasts will be based on a 2.5 or 5 square km grid box for which the RAWS site is located.

G. APPENDIX – BACKUP SPOT FORECAST REQUEST FORM

BACKUP SPOT FORECAST REQUEST FORM

Required Elements in RED

PROJECT NAME

Project Name:

☐ Wildfire ☐ WFU ☐ HAZMAT

☐ Prescribed Fire ☐ SAR

Ignition Time: ☐ ☐ Mountain Local Time

Date: ☐ ☐ Central Local Time

REQUESTING AGENCY

Requesting Agency:

Requesting Official:

Phone Number: Ext.

FAX Number:

Contact Person:

REASON FOR SPOT FORECAST REQUEST

Must choose either Wildfire or one of the Non-Wildfire reasons

☐ **Wildfire** **Non-Wildfire**

☐ Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA).

☐ State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services.

☐ Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

LOCATION

Lat:

Lon:

7.5' Quad:

Legal (T/R):

☐ AZ ☐ NM ☐ TX

Elevation: Top Bottom

Drainage:

Aspect:

Size: (Acres)

*Enter Lat/Lon, Legal(T/R) also acceptable.

FUEL

Type:

Sheltering

☐ Full ☐ Partial ☐ Unsheltered

OBSERVATIONS

Place	Elev	Time	Wind	Temp	Wetbulb	RH	Dewpt.	Sky/Weather

PRIMARY FORECAST ELEMENTS

TDA	TNT	TMR	(Today, Tonight, Tomorrow)
☐	☐	☐	Clouds / Weather
☐	☐	☐	Chance of Precipitation
☐	☐	☐	Temperature
☐	☐	☐	Relative Humidity
☐	☐	☐	20 Foot Wind

REMARKS

1. Example of Completed Spot Request Form - Entries for location show three different, correct methods; legal description, lat/lon in decimal degrees, and lat/lon in degrees, minutes and seconds.

SPOT FORECAST REQUEST FORM

Required Elements in Italics

Fax to Appropriate NWS Office

PROJECT NAME

Project Name: Highway 4

○ Wildfire ○ WFU

◉ Prescribed Fire

Ignition Time: 0930 ◉ Mtn ○ Central

Date: 03/25/03

REQUESTING AGENCY

Requesting Agency: NPS - Bandelier NM

Phone Number: 505-555-1111

FAX Number: 505-555-2222

Contact Person: LD Clark

LOCATION

Legal (T/R): T12N R1W Sec12 ◉ NM

Either Legal OR Lat/Lon Required — *Lat:* 36.0217 ○ AZ

Lon: 107 02 05 ○ TX/OK

7.5' Quad: Pajarito

Elevation: Top 9000 Bottom 9000

Drainage: Frijoles

Aspect: SE

Size: 20 (Acres)

FUEL

Type: PP Piles

Sheltering

○ Full

◉ Partial

○ Unsheltered

OBSERVATIONS

Place	*Elev*	*Time*	*Wind*	*Temp*	*Wetbulb*	*RH*	*Dewpt.*	*Sky/Weather*
site	9000	0730	0-1 NW	32	31	91	31	clear - trace snow

PRIMARY FORECAST ELEMENTS

TDA TNT TMR (Today, Tonight, Tomorrow)

- ☑ ☑ ☑ Clouds / Weather
- ☑ ☑ ☑ Chance of Wetting Rain
- ☑ ☑ ☑ Temperature
- ☑ ☑ ☑ Relative Humidity
- ☑ ☑ ☑ 20 Foot Wind

REMARKS

Please include ventilation data.

Additional Remarks, Comments or Feedback on Previous Forecasts:

H. APPENDIX – CATALOG OF RAWS AND NFDRS OBSERVATION LOCATIONS

Permanent Stations and Locations Sorted by NFDRS Zone

Name	NWS ID	Agency	Latitude	Longitude	Elev	NESSID	PSA	CWA	FWF_Zone	NFDRS_Zone
MOUNT LOGAN	20107	BLM	36.3472	-113.1989	7605	3258C0E0	SW01	VEF	AZ102	301
OLAF KNOLLS	20108	BLM	36.5072	-113.8161	2900	3258F57A	EB13	VEF	AZ102	301
TWEEDS POINT	20109	BLM	36.5819	-113.7319	5200	32595778	EB13	VEF	AZ102	301
ROBINSON TANK	20111	BLM	36.4706	-112.8414	5560	32591472	SW01	VEF	AZ102	301
NIXON FLATS	20113	BLM	36.3883	-113.1581	6500	327C4220	SW01	VEF	AZ102	301
BLACK ROCK	20114	BLM	36.7944	-113.7567	7080	3257E09E	EB13	VEF	AZ102	301
MOSS BASIN	20115	BLM	35.0336	-113.8925	5920	3258B670	SW02	VEF	AZ102	301
UNION PASS	20116	BLM	35.2247	-114.3747	3520	32596200	SW02	VEF	AZ102	301
HURRICANE	20117	BLM	36.6992	-113.2072	5445	325883EA	EB13	VEF	AZ102	301
MUSIC MOUNTAIN	20119	BLM	35.6147	-113.7939	5420	3258E60C	SW02	VEF	AZ102	301
TRUXTON CANYON	20120	BIA	35.7825	-113.7942	5350	327C873E	SW02	VEF	AZ102	301
YELLOW JOHN MOUNTAIN	20217	BLM	36.1550	-113.5494	6160	325FB444	SW01	VEF	AZ102	301
TUSAYAN	20207	USFS	35.9900	-112.1200	6697	328305AC	SW01	FGZ	AZ107	302
FRAZIER WELLS	20213	BIA	35.8456	-113.0550	6770	5212A5E6	SW01	FGZ	AZ107	302
IRON SPRINGS	20501	USFS	34.5853	-112.5019	5000	32832340	SW02	FGZ	AZ108	302
CROWN KING	20502	USFS	34.2083	-112.3333	5900	325E30AA	SW02	FGZ	AZ108	302
VERDE	20503	USFS	34.5539	-111.8492	3100	326C2058	SW06N	FGZ	AZ137	302
GOODWIN MESA	20507	BLM	34.7575	-113.2969	4200	32581688	SW02	FGZ	AZ137	302
HUMBUG CREEK	20508	BLM	34.1164	-112.3006	5250	3258736E	SW02	FGZ	AZ108	302
STANTON	20509	BLM	34.1667	-112.7333	3600	3259329E	SW02	FGZ	AZ137	302
SUNSET POINT	20510	BLM	34.1953	-112.1417	2960	3259440E	SW02	FGZ	AZ137	302
CHERRY	20511	USFS	34.5964	-112.0481	5100	3233B7EA	SW02	FGZ	AZ108	302
PAYSON	20602	USFS	34.2431	-111.3028	4975	3260F7AC	SW06N	FGZ	AZ118	302
PLEASANT VALLEY	20603	USFS	34.0869	-110.9419	5050	32338270	SW06N	FGZ	AZ118	302
RED LAKE	20610	USFS	34.1814	-110.7892	6200	3331504E	SW05	FGZ	AZ118	302
FLAGSTAFF	20209	USFS	35.1414	-111.6719	7000	3283D3C4	SW05	FGZ	AZ115	303
BRIGHT ANGEL	20211	NPS	36.2047	-112.0789	8134	FA4520F4	SW01	FGZ	AZ106	303
DRY PARK	20212	USFS	36.4500	-112.2400	8706	32390536	SW01	FGZ	AZ104	303
WARM SPRINGS CANYON	20216	USFS	36.7000	-112.2300	8010	32401B62	EB13	FGZ	AZ104	303
LINDBERGH HILL	20220	NPS	36.2856	-112.0786	8800	FA45156E	SW01	FGZ	AZ104	303
GUNSIGHT	20223	BLM	36.7044	-112.5833	5280	32582312	EB13	FGZ	AZ104	303
BUCKSKIN MTN	20224	BLM	36.9306	-112.1997	6400	32590704	EB13	FGZ	AZ104	303
PARIA POINT	20226	BLM	36.7278	-111.8219	7235	32500158	EB13	FGZ	AZ104	303
FOUR SPRINGS	20227	BLM	36.7939	-112.0422	6560	324FF0D0	EB13	FGZ	AZ104	303
GREENBASE	20284	USFS	35.2742	-112.0597	6923	323923DA	SW05	FGZ	AZ115	303
HOUSEROCK	20225	BLM	36.5644	-111.9781	5400	32586018	EB13	FGZ	AZ105	304
HOPI	20312	BIA	35.8625	-110.6150	5602	327CE2D8	SW04	FGZ	AZ140	304
PINEY HILL	20402	BIA	35.7608	-109.1678	8102	327A01E4	SW04	FGZ	AZ111	304
HORSE CAMP CANYON	20903	BLM	32.9375	-110.4961	4040	32585582	SW06S	TWC	AZ147	305
SASABE	21206	FWS	31.6908	-111.4500	3500	83712434	SW06S	TWC	AZ147	305
SELLS	21209	BIA	31.9100	-111.8975	2366	327C64CC	SW03	TWC	AZ147	305
COLUMBINE	21005	USFS	32.7039	-109.9139	9521	326B91E2	SW06S	TWC	AZ148	306
MULESHOE RANCH	21007	BLM	32.4000	-110.2708	4560	3258D396	SW06S	TWC	AZ148	306

Permanent Stations and Locations Sorted by NFDRS Zone (cont.)

Name	NWS ID	Agency	Latitude	Longitude	Elev	NESSID	PSA	CWA	FWF_Zone	NFDRS_Zone
BLACK HILLS	21008	BLM	33.0867	-109.9506	3300	327D40DA	SW06S	TWC	AZ146	306
DRY LAKE	21009	BIA	33.3597	-109.8331	7428	5210B364	SW06S	TWC	AZ146	306
NOON CREEK	21010	USFS	32.6678	-109.7881	4925	32330464	SW06S	TWC	AZ148	306
GUTHRIE	21104	BLM	32.9500	-109.2833	6340	32583064	SW06S	TWC	AZ148	306
TRAIL CABIN	21105	USFS	33.2667	-109.3683	6279	324747F8	SW08	TWC	AZ146	306
STRAY HORSE	21106	USFS	33.5406	-109.3169	7020	327FF6A0	SW08	TWC	AZ146	306
SAGUARO	21202	USFS	32.3167	-110.8133	3100	3282F7D2	SW06S	TWC	AZ148	306
EMPIRE	21205	BLM	31.7806	-110.6347	4650	325805FE	SW06S	TWC	AZ148	306
RINCON	21207	NPS	32.2056	-110.5481	8240	FA60D65E	SW06S	TWC	AZ148	306
SCOUT CAMP	21208	USFS	32.3981	-110.7250	7554	3233A49C	SW06S	TWC	AZ148	306
HOPKINS	21302	USFS	31.6753	-110.8800	7120	327FB5AA	SW06S	TWC	AZ148	306
HEADQUARTERS	21409	NPS	32.0000	-109.3500	5400	FA61A234	SW06S	TWC	AZ148	306
CARR	21411	USFS	31.4450	-110.2800	5400	3238F748	SW06S	TWC	AZ148	306
RUCKER	21414	USFS	31.7611	-109.3486	5700	3242F3B6	SW06S	TWC	AZ148	306
SMITH PEAK	21501	BLM	34.1158	-113.3472	2500	327D7540	SW02	PSR	AZ132	307
MORMON LAKE	20215	USFS	34.9139	-111.4428	7400	32339106	SW05	FGZ	AZ115	308
OAK CREEK	20219	USFS	34.9417	-111.7517	4924	326326CA	SW05	FGZ	AZ138	308
PROMONTORY	20221	USFS	34.3617	-111.0200	7800	326BD2E8	SW05	FGZ	AZ118	308
HEBER	20301	USFS	34.3978	-110.5644	6635	326F2756	SW05	FGZ	AZ116	308
LAKESIDE	20303	USFS	34.1600	-109.9800	7000	32840798	SW05	FGZ	AZ117	308
LIMESTONE CANYON	20309	BIA	34.1789	-110.2736	6800	5211D478	SW05	FGZ	AZ116	308
MOUNTAIN LION	20310	BIA	33.7125	-109.7097	5483	327C012A	SW08	FGZ	AZ117	308
ALPINE	20401	USFS	33.8417	-109.1222	8031	326F12C	SW08	FGZ	AZ117	308
GREER	20404	USFS	34.0600	-109.4500	8200	326BC19E	SW08	FGZ	AZ117	308
GLOBE	20601	USFS	33.3503	-110.6519	3560	3283E65E	SW06N	PSR	AZ133	309
ROOSEVELT	20604	USFS	33.6628	-111.1158	2180	326BA478	SW06N	PSR	AZ133	309
SAN CARLOS 1	20608	BIA	33.3714	-110.4550	2840	327C34B0	SW06N	PSR	AZ133	309
HILLTOP	20609	BIA	33.6183	-110.4200	5290	5212C000	SW06N	PSR	AZ133	309
CIBOLA	20121	FWS	33.3039	-114.6933	250	8378C19A	SW03	PSR	AZ131	310
SQUAW LAKE	45801	BLM	32.9083	-114.4944	300	32598110	SW03	PSR	CA231	310
HAVASU	20118	BLM	34.7872	-114.5617	475	325846F4	SW02	VEF	AZ101	311
ALBINO CANYON	290102	BLM	36.9700	-107.6700	7160	324BF5EA	SW04	ABQ	NM101	351
CUBA	290705	BLM	35.9419	-107.0772	6172	325B84E4	SW07	ABQ	NM101	351
STONE LAKE	290201	BIA	36.7314	-106.8647	7440	3268F30A	SW07	ABQ	NM102	352
COYOTE	290202	USFS	36.0667	-106.6472	8800	3232D0F6	SW07	ABQ	NM102	352
DEADMAN PEAK	290203	USFS	36.4231	-106.7719	8450	326EB0CE	SW07	ABQ	NM102	352
JARITA MESA	290204	USFS	36.5558	-106.1031	8803	32814352	SW07	ABQ	NM102	352
DULCE #2	290207	BIA	36.9350	-107.0000	6793	52146036	SW07	ABQ	NM102	352
TRUCHAS	290210	USFS	36.0589	-105.7694	8340	328383B8	SW10	ABQ	NM102	352
TAOS	290305	BIA	36.4153	-105.5581	7050	3279707A	SW10	ABQ	NM102	352
JEMEZ	290702	USFS	35.8411	-106.6189	7999	328390CE	SW07	ABQ	NM102	352
TOWER	290801	NPS	35.7792	-106.6267	6500	FA6362DE	SW07	ABQ	NM102	352
SANTA FE WATERSHED	290901	USFS	35.6869	-105.8603	7674	324172AC	SW10	ABQ	NM102	352
CIMARRON	290401	USFS	36.6061	-105.1203	8744	3333A53E	SW10	ABQ	NM103	353
BARTLEY	291002	USFS	35.8939	-105.4619	8339	32881572	SW10	ABQ	NM103	353
PECOS	291202	USFS	35.5458	-105.4944	8600	3246E5FA	SW10	ABQ	NM103	353
MILLS CANYON	291101	USFS	36.0544	-104.3244	5856	328904FE	SW13	ABQ	NM104	354
WASHINGTON PASS	290101	BIA	36.0750	-108.8578	9370	3279F66E	SW04	ABQ	NM105	355
ZUNI	290603	BIA	35.0444	-108.4819	6320	327B25F2	SW07	ABQ	NM105	355
BRUSHY MOUNTAIN	291301	BIA	34.7194	-107.8475	8789	5210D682	SW07	ABQ	NM105	355
GRANTS	291302	USFS	35.2417	-107.6700	8449	3283B622	SW07	ABQ	NM105	355
MALPAIS LAVA FLOW	293301	BLM	34.8517	-108.1744	7514	324B837A	SW07	ABQ	NM105	355
BLUEWATER CREEK	293302	USFS	35.2228	-108.1553	7624	3286A294	SW07	ABQ	NM105	355
BLUEWATER RIDGE	293303	USFS	35.1942	-108.1631	8289	3333B648	SW07	ABQ	NM105	355
LAGUNA	293304	BIA	35.0394	-107.3731	5773	5213A71C	SW07	ABQ	NM105	355
RAMAH	293305	BIA	34.9947	-108.4128	7038	5213F760	SW07	ABQ	NM105	355

Permanent Stations and Locations Sorted by NFDRS Zone (cont.)

Name	NWS ID	Agency	Latitude	Longitude	Elev	NESSID	PSA	CWA	FWF_Zone	NFDRS_Zone
SANDIA LAKES	290706	BIA	35.2300	-106.5906	5000	327AE216	SW09	ABQ	NM106	356
BOSQUE	292103	FWS	33.8517	-106.8517	4500	837141D2	SW09	ABQ	NM106	356
SEVILLETA	292105	FWS	34.3769	-106.7978	4789	837933E4	SW09	ABQ	NM106	356
OAK FLATS	291402	USFS	35.0042	-106.3217	7575	323372F4	SW11	ABQ	NM107	357
MOUNTAINAIR	291501	USFS	34.5206	-106.2614	6500	3283A554	SW11	ABQ	NM107	357
CHUPADERA	292102	BLM	33.7728	-106.0983	6520	325B376A	SW11	ABQ	NM107	357
MELROSE RANGE	291901	USAF	34.3000	-103.8000	4350	AF100680	SW13	ABQ	NM108	358
PELONA MOUNTAIN	292009	BLM	33.6925	-108.0631	8080	324BE69C	SW08	ABQ	NM109	359
DATIL	292012	USFS	34.2897	-107.7664	8300	3283F528	SW08	ABQ	NM109	359
MAGDALENA	292104	USFS	33.8511	-107.5431	8500	32336182	SW08	ABQ	NM109	359
BEAVERHEAD	292001	USFS	33.4183	-108.1000	6700	3276130E	SW08	EPZ	NM110	360
SLAUGHTER	292008	USFS	34.0667	-108.4333	8680	3233D20C	SW08	EPZ	NM110	360
BEAR WALLOW	292010	USFS	33.4550	-108.6650	9953	326C15C2	SW08	EPZ	NM110	360
GILA CENTER RAWS	292011	USFS	33.2233	-108.2400	5600	3232F61A	SW08	EPZ	NM110	360
HACHITA VALLEY	292702	BLM	31.7200	-108.3300	4291	3243D7A0	SW09	EPZ	NM111	361
SIERRA DE LAS UVAS	292902	BLM	32.5200	-107.1200	5000	326335BC	SW09	EPZ	NM112	362
DRIPPING SPRINGS	292903	BLM	32.3233	-106.5867	6172	324B900C	SW09	EPZ	NM112	362
SAN ANDRES	292904	FWS	32.5800	-106.5250	6138	83709540	SW09	EPZ	NM112	362
SMOKEY BEAR	292203	USFS	33.3508	-105.6667	6900	32340650	SW12	EPZ	NM113	363
MAYHILL	293002	USFS	32.8858	-105.4683	6558	3283C0B2	SW12	EPZ	NM113	363
MESCAL	293003	BIA	33.1667	-105.8333	6627	5212B690	SW12	EPZ	NM113	363
COSMIC	293004	USFS	32.7789	-105.8194	9100	326FF13E	SW12	EPZ	NM113	363
DUNKEN	292302	BLM	32.8256	-105.1806	5500	325B41FA	SW12	MAF	NM114	364
QUEEN	293105	USFS	32.2036	-104.6903	5605	3287C588	SW14N	MAF	NM114	364
EIGHT MILE DRAW	292301	BLM	33.6511	-104.3217	3697	327CA1D2	SW14N	MAF	NM115	365
BATDRAW	293101	NPS	32.1786	-104.4406	4425	FA623058	SW14N	MAF	NM115	365
CAPROCK	293104	BLM	32.9278	-103.8567	4210	325B241C	SW14N	MAF	NM115	365
PADUCA	293202	BLM	32.1797	-103.7217	3510	325B6716	SW14N	MAF	NM115	365
PINERY	417101	NPS	31.8944	-104.7978	5381	FA40D7B0	SW14N	MAF	TX258	N/A
THE BOWL	417103	NPS	31.9250	-104.8253	7755	FA61E13E	SW14N	MAF	TX258	N/A
FORT DAVIS	417201	S&PF	30.6006	-103.8867	4764	8841B602	SW14S	MAF	TX074	N/A
PANTHER JUNCTION	417401	NPS	29.3275	-103.2075	3750	FA63D150	SW14S	MAF	TX081	N/A
CHISOS BASIN	417403	NPS	29.2708	-103.3014	5400	FA635744	SW14S	MAF	TX081	N/A
CEDAR	418701	NPS	35.6667	-101.5667	3052	FA62C0DC	SW13	AMA	TX008	N/A
BOOTLEG	418801	S&PF	34.8280	-102.8090	4058	8841F508	SW13	AMA	TX016	N/A
CAPROCK	418901	S&PF	34.2100	-101.0300	2561	8841E67E	SW14N	LUB	TX031	N/A
MATADOR	418902	S&PF	34.1175	-100.3444	1900	884252FE	SW14N	LUB	TX032	N/A
BARNHART	419201	S&PF	30.9856	-101.1578	2562	8841731C	SW14S	SJT	TX076	N/A
MIDLAND	419202	S&PF	31.9431	-102.1897	2802	8841C092	SW14N	MAF	TX062	N/A

I. APPENDIX – VERIFICATION

1. National Digital Forecast Database: http://www.weather.gov/forecasts/graphical/sectors/

2. Rocky Mountain Center: http://fireweather.sc.egov.usda.gov/verification_main.htm

3. NFDRS: To be implemented during 2006 season. Web address will be forwarded upon service launch.

4. SWCC Products: To be implemented. Web address will be forwarded upon service launch.